Paper TRADE JOURNAL

MARCH 10, 1949

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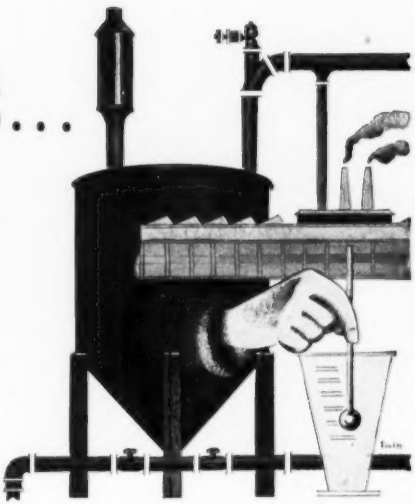

During the years immediately following 1934, the pulp and paper industry gave considerable attention to the bleaching of kraft. Hooker technical men continued their cooperation with the industry by carrying out intensive research to learn more about the chemistry of bleaching kraft and to develop better detail of operations.

Out of this cooperative study there came many contributions to a better understanding of kraft bleaching and to better operational procedure. Much of this information resulting from Hooker research is still available in the form of reports and bulletins. Among them are the following:

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Chemistry of Bleaching Chemical Wood Pulps

Bulletin 212
Bleaching Kraft

Bulletin 214
What Do We Know About Bleaching

Bulletin 236
Importance of pH and Catalysts in Bleaching Operations

Bulletin 241
Bleaching Gumwood Sulfate Pulp

Bulletin 243
Procedures and Brightness Grades in Bleaching Sulfate Pulps

The value of these publications is attested to by the hundreds of them that have been and still are being distributed. Much of the information in them is still pertinent to present day procedures. We suggest you send for any of those you do not have.

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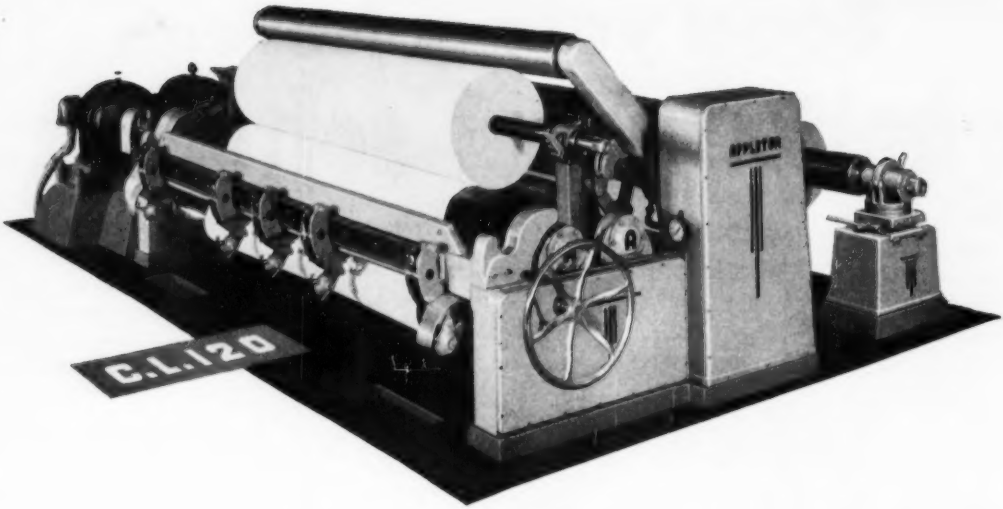

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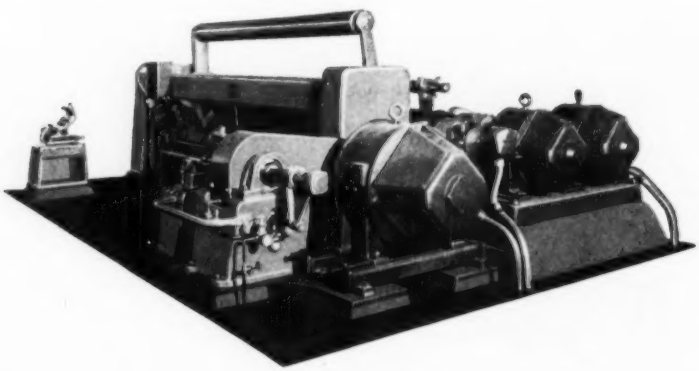

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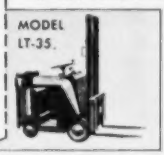

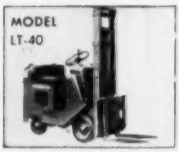

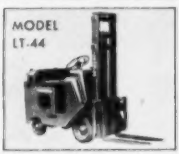

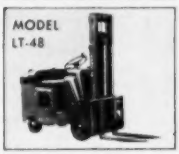

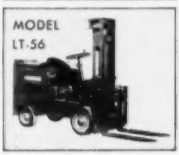

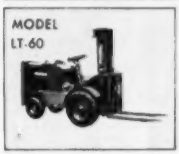

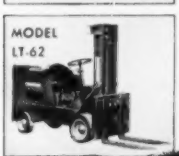

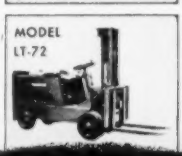

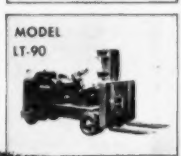

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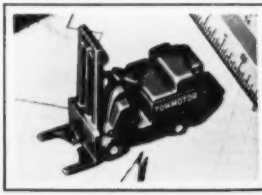

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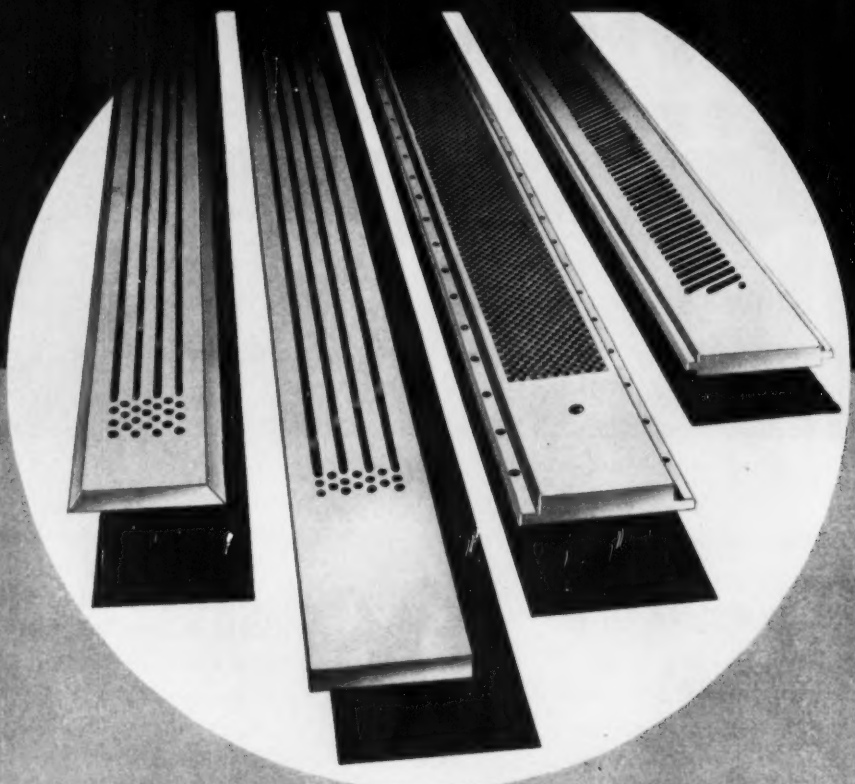

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VOL. 128, NO. 10

Paper Industry Protests Rail Rate Hike

WASHINGTON—The paper industry through the American Paper & Pulp Ass'n., on March 1 asked the Interstate Commerce Commission to deny a pending request of railroads for a further rate increase representing approximately $700,000,000 per annum.

Testimony supporting the plea of the industry was supplied by a number of expert witnesses, including:

Dr. John Lee Coulter, economist; Dr. Louis T. Stevenson, economist and assistant treasurer of the association; and E. W. Tinker, executive secretary.

Dr. Coulter pointed out that inflation curves have flattened out, and many are turned downward, also that workers in manufacturing are falling off, while employment in Government has increased very substantially.

"This means to me," he told the Commission, "that we are reducing the kind of production on which our people must depend for their real income, and upon which the railroads must depend for traffic, while we are increasing the government type of employment which is not really productive in terms of goods, but calls for more taxes."

Relating this to the transportation situation, Dr. Coulter recalled that transportation costs are a very important factor in the cost of many commodities, especially where there are long hauls to reach the markets.

"Where transportation cost is increased in such cases the added cost must either be passed on or absorbed. Under present conditions in many lines of industry the cost cannot be passed on because prices are falling," he continued. "And it may be difficult for an industry to absorb them because of declining profit margins. It is a far different picture from what we had when employment, production and price trends were sharply upward."

He told the Commission that whatever the Government economists call the new downward shift, "disinflation" and not depression, "it is a very definite change in economic trends, and it means among other things, the inflationary honeymoon is over."

Testimony of Dr. Stevenson and Mr. Tinker contended, in the inability of the shippers to any longer pass freight rate increases on to the buyer, a large percentage of paper mills would have their profits wiped out by the proposed hikes, which would amount to $58,000,000 for the paper industry alone.

Answering a question as the factors which convince him that the industry has turned a corner, Dr. Stevenson replied that, "First, backlogs of orders have practically disappeared."

"In 1945 and 1946 the industry as a whole was about three months behind in filling orders," he said. "In fact, the demand was so greatly in excess of production that most of the mills had to adopt a quota system whereby their customers were rationed on an historical basis. But, since the beginning of 1947, the curve showing the backlog of orders has gone down at a rapid rate and today, instead of being something like three months, is nearer two weeks, and the quota system has been entirely eliminated. In other words, there has been a most radical change in the general picture of supply and demand."

Discussing the relationship between orders and production as of today, Dr. Stevenson said all through 1948, new orders were running less than production, and he added that "There is nothing whatever in the period lying ahead to indicate a different trend, which continues down."

He said there is a very definite present trend to lowered production, especially as to some grades, which he listed as fine papers, including writing paper, "but in keeping with reduced demand, all grades of paper are beginning to feel the effect of this turning of the corner, with the possible exception of newsprint, the bulk of which is made in Canada."

Dr. Stevenson said the index of average value per ton of all papers has shown a downward trend since February, 1948, and that it is estimated there will be 1,500,000 tons less production this year than in 1948.

The great capacity of the mills at this time, including some 3,000,000 tons annual capacity added in the last three years, he said, "makes us all the more concerned about unfavorable economic trends."

"Because of our large capacity we can be more badly hurt by anything that adversely affects the national economy," said the witness, "and I want to say with great earnestness that our whole industry is deeply concerned about certain factors in the economic situation."

Mr. Tinker cited "the very substantial change in the economic situation" as the ground on which the Association has now altered a previous policy of supporting rail requests for higher rates.

He said "The whole economy of the nation could be very seriously affected

(Continued on page 46)

Installing $1,730,000 Machine

FORT EDWARD, N.Y.—Plans for the installation of a new paper machine and auxiliary equipment at a total cost of $1,730,000 at the local plant of the Marinette Paper Co., a Scott subsidiary, have been disclosed by Raymond C. Mateer, executive vice president of the Scott company.

The machine will embody the principles of operation and paper manufacture now being used on the company's newest high speed machines for the production of soft tissue and will incorporate improvements recently developed. The installation of the machine and auxiliary equipment with the necessary building changes is scheduled for completion within a year.

When the new unit is placed in operation, 12 paper making machines will be producing paper for Scott products.

Work is now in progress on the new shipping conveyor system and pulp preparation equipment. The rebuilding of one of the present paper machines is under way with completion scheduled for July 1, as originally planned. It is expected that the machine will be out of operation only a month. The rated capacity of the rebuilt machine will be increased 50 per cent.

Forest Decline Calls for Action, Federal Report Says

WASHINGTON—The Forest Service in the U. S. Department of Agriculture on February 21 issued a report bringing together for the first time in concise form the over-all findings of the nationwide forest reappraisal, field work for which it completed in 1946. The report outlines the principal federal measures which the Forest Service holds "necessary to assure ample timber supplies for the future" and "to build up and maintain the forest resources so as to insure their maximum contribution to lasting prosperity for our country." The report is entitled "Forests and National Prosperity," USDA Miscellaneous Publication No. 668.

After several sections devoted to forest land and timber resources, and how they are being managed, the report discusses the raw material supply and wood waste problems of the major forest industries. Watershed, range, recreational and wildlife uses and services are considered in relation to timber supply and forest management. Another section is devoted to forest protection from fire, insects and disease, and the report concludes with a discussion of how forest ownership affects the outlook for improvement in the nation's forest situation. Separate reports covering the various individual phases of the reappraisal, the most extensive study of the country's forests ever made, have been issued previously.

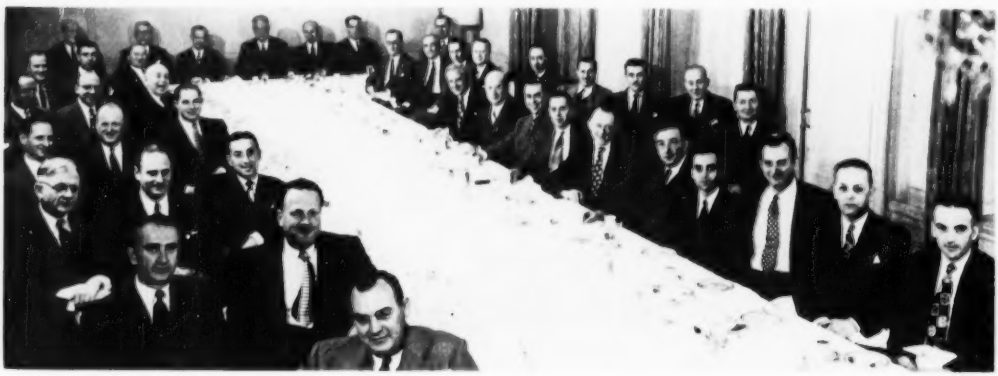
Warning that "if the United States is to maintain a place of economic leadership in the world of tomorrow, it can ill afford to temporize with its forests," the report declares not only that the sawtimber supply is declining under the impact of an annual cut which together with natural losses is 50 percent greater than current annual growth but also that its quality is deteriorating.

At the same time, the summary says, indications are that the nation's long-range potential timber requirement is considerably greater than the present annual cut especially if prospective new uses for wood, export and a backlog for national security are taken into account. These over-all needs include dependable timber supplies sufficient "to sustain and expand the supply of consumer goods and employment in the wood industry" to provide for national security, and "to contribute to international peace and well-being" through helping meet world timber needs in time of shortage.

Setting a long-range, flexible goal, the report suggests that if these needs are to be met the country should aim to grow from 18 to 20 billion cubic feet of all timber, including from 65 to 72 billion board feet of sawtimber, a year. At present annual growth is put at 13 billion cubic feet of all timber, including 35 billion board feet of sawtimber. However, the report states that even if good forest protection, management, and practices were generally applied to American forests within the next few years it would still take several decades before this growth goal could be achieved.

Tomorrow's wood supply is in the forest trees growing today, but for the nation as a whole, according to the report, the forest growing stock is "below par in quantity, quality and distribution," while 164 million acres of the country's commercial forest area, or 35 percent, is "deforested or has less than 40 per cent of full stocking." And the further the long-time depletion which produced this condition is allowed to go unchecked the more difficult and costly becomes the job of putting the forest resource in shape to meet the nation's need.

The report recognizes substantial progress in forestry, both public and private, in recent years. There is ample evidence, especially in the South and Pacific Northwest, where timber grows rapidly, that forestry pays and is good business. Throughout the country a growing number of owners are putting their lands under good forest management. The best showing is reported to be by the lumber and pulp companies which together own 15% of the commercial forest land in private ownership. Small holdings, which comprise three-fourths of the private forest land



PAPER BAG INSTITUTE ANNUAL DINNER

Biltmore Hotel, New York, February 21

Speakers Table, left to right: J. A. C. Kavanagh, director; J. M. Hartmann, retiring vice-president; H. S. Daniels, president; R. L. Fitts, guest of honor; J. Ginsburg, vice-president; Frank Goggins, counsel . . . Other guests included: W. Allin, Southern Advance Bag & Paper Co.; N. Berger, Forbes Paper Co.; A. Bleyer, Sr., and A. Bleyer, Jr., Alfred Bleyer & Co.; L. E. Canno, Equitable Paper Bag Co.; J. Chernick, Kary Safe Paper Bag Co.; A. B. Collins, Camp-Betner Corp.; M. Eisenman, American Paper Co.; J. Fine, Triangle Paper Bag Co.; E. Foster, Southern Advance Bag & Paper Co.; W. Gardiner, Paper Bag Institute; E. A. Jacobs, Triangle Paper Bag Co.; F. John, International Paper Co. (Southern Kraft Div.); M. Kaplan, Sentinel Bag & Paper Co., Inc.; H. C. Lawless and L. J. Doyle, Union Bag & Paper Corp.; W. Mazer, Hudson Bag Co.; A. Newman, Sentinel Bag & Paper Co.; G. November, L. Glickman & Co.; D. J. Phillips, Phillips Paper Products; A. E. Salzman, and H. Salzman, Brooklyn Standard Bag Co.; E. I. Schorsch, Schorsch & Co.; W. Shorter, Camp Mfg. Co., Inc.; A. Studley and R. Cassins, Studley Paper Co.; J. R. Street, Camp Mfg. Co.; G. J. Ticoulat, W. Brown and G. S. Runyon, Crown Zellerbach Corp.; G. Weisberger, Equitable Paper Bag Co., Inc.; S. Witty, Trinity Bag & Paper Co.; and M. L. Wuescher, L. Gould, A. Solls and D. Stout, Gaylord Container Corp.

are said to be "the toughest problem." More vigorous action, concludes the report, is needed to get good forestry generally applied.

The action proposed requires the cooperation of federal, state, and local governments, private owners and interested agencies. It falls into three parts, (1) public aids to private forest landowners, especially small owners; (2) public control of cutting practices on private land sufficient to stop forest destruction and keep the land reasonably productive; and (3) expansion and intensified management of the national forests. The public aids, some requiring new federal legislation, others in effect but in need of strengthening, follow:

More and broader technical assistance to private owners, particularly small owners, in establishing and tending forests, and in harvesting and marketing forest products, and corresponding assistance to mill operators and other processors. In this connection, the report says that in 1948 under a federal-state cooperative program 173 farm foresters gave such assistance to private owners in 650 counties in 40 states but that an adequate program in this field would cover some 2,000 counties.

Stepping up of educational and demonstration work in forestry such as is done by federal and state agricultural extension services and private forestry agencies.

Increasing federal aid to states in the production and distribution of nursery stock for forest planting, and making planting stock available to non-farm as well as farm owners. Emphasizing the need for more widespread forest planting, the report says there are 62 million acres of private forest land either denuded or so poorly stocked as to be practically idle; that prior to 1947 only about 2½ million acres of private land was successfully planted, and that in 1947 about 114,000 acres were planted.

Creation of a federally sponsored forest credit system to make long-term loans on terms and conditions suitable for foresty purposes, adapted to the needs of private forest operators, and contingent upon sound forest practices, together with a federally sponsored insurance system to protect such loans and to reduce the risk inherent in forestry enterprises.

Other measures proposed in this part of the program are additional federal aid to speed adequate forest fire protection for the 439 million acres of state-owned and private forest land in need of it; strengthening of cooperative protection against forest insects and diseases; expansion of all phases of forest research; encouragement of forest cooperative associations among small landowners; and service to states in the improvement of forest tax laws.

As to the second part of the action program recommended—"public control of cutting on private land sufficient to stop forest destruction and to keep the land reasonably productive"—the report recommends basic federal legislation setting up standards as a guide for local forest practices and authorizing federal financial aid to states which have regulatory laws consistent with its requirements. It would also provide for federal administration in states that request it or which, after a reasonable time, do not put regulation into effect. The law would not require sustained yield management nor, so long as cutting practices met required standards, would it regulate when or how much of his timber any owner might cut.

Dealing with National Forests, the program's third part recommends their further development and expansion "as a great public asset" capable of producing much larger returns in sustained output of timber, livestock forage, water, wildlife and recreation, if more intensively managed. As to expansion, it is recommended that there be added to the present National Forests and to state and community forests, a considerable acreage of land so badly depleted that it is unlikely private owners will restore them to productive condition, and certain areas of special importance for watershed protection and other public services.

Propose N.E. Power Adm'n.

BOSTON, Mass. — Government power experts are giving serious consideration to the possibility of a Northeastern Power Administration, paper manufacturers were informed on February 19, and one official in Washington indicated it could become a reality in five years.

E. P. Eardley, chief engineer of the Interior Department's Power Division, who made the prediction, said such a development would be patterned after the great government power marketing projects in other parts of the country. It was hinted at recently by Interior Secretary Krug.

The government is currently concentrating on a Southeastern Power Administration covering everything east of the Mississippi River and south of Washington, D. C. Its completion would leave the northeast as the only remaining area into which the government has not stepped, Eardley stated.

And, already, there is activity in this direction. Army Engineers, he pointed out, have completed a report on Pennsylvania's power potential. Meanwhile, they are quietly surveying New England rivers and streams and are expected to come up with a preliminary report before the end of the year.

The new Congress has been presented with two resolutions by Massachusetts Republicans calling for engineers' surveys of New England's entire river system, and reports on their hydro-electric potential. The sponsors are Senator Henry Cabot Lodge and Representative Edith Nourse Rogers.

While government officials are already convinced there is a huge block of undeveloped hydro power in the Northeast, they would need engineers' recommendations before any project could be undertaken. Congressional approval, of course, also would be necessary.

Eventually, the proposed Northeastern Power Administration would step in simply as a marketing agent to assist in distributing power surpluses from any dams constructed in the overall program.

Engineer Eardley says New England must realize its industry is tied to electricity as much as it used to be tied to water power.

"New England will have to wake up sooner or later to the competition it faces from the rest of the country. If large blocks of power are made available there, more industry will come in and fewer firms will move out. The sooner the folks up there realize it, the better," he declared.

Latest figures show New England has 3,348,000 kilowatts of undeveloped hydro power. Maine leads with 2,488,000; Rhode Island has none; New Hampshire had 393,000 kilowatts of hydro potential; Vermont had 303,000; Massachusetts has 110,000, and Connecticut has 94,000.

According to preliminary Federal Power Commission data, the country's power reserve last year was dangerously low. Experts feel a 20 percent reserve is desirable, but last year's reserve amounted to only 3.5 percent.

Bill to Committee

HOLYOKE, Mass.—Paper manufacturers here were notified from Washington on March 3, that a bill by Representative Foster Furcolo, (D-Springfield) directing a federal survey of the power potential of the Connecticut and Merrimack Rivers has been referred to the House Committee on Public Works. A companion measure, filed by Massachusetts Senator Henry Cabot Lodge several weeks ago, is awaiting action in the Senate Public Works Committee.

Merrimack Costs Too High

BOSTON, Mass. — Strong opposition was voiced on February 24 to a proposed Merrimack River Valley sewerage project which would affect paper manufacturing plants and allied industries along the river, on the grounds that it would be too expensive.

Hoosac Control Ok'd

NORTH ADAMS, Mass.—U. S. Army Engineers have approved a $20,000,000 Hoosac River flood control project, paper manufacturers here were informed on March 4.

Southern Conference, Forest Farmers Ass'n

Montgomery, Ala., February 19

MONTGOMERY, Ala. — A broad program designed to bring the knowledge of improved forestry practices to the small landowner was adopted by the Southern Conference of the Forest Farmers' Ass'n., on Feb. 19.

W. M. Oetmeier of Fargo, Ga., was reelected president of the organization. Other officers named are: J. V. Whitfield, Burgaw, S. C., vice-president; W. S. Beasley, Columbia, Tenn., vice-president Region 1; Earl Porter, Mobile, Ala., vice-president Region 2; and Fred. Dierks, Kansas City, Mo., vice-president Region 3. Named to the board of directors were Ben May, of Mobile, Ala., and W. T. Neal, of Brewton, Ala.

Resolutions adopted by the group called for: (1) More federal funds for nre control with appropriations for this activity to increase from $9,000,000 to $40,000,000 annually; (2) Expansion of the federal program of tree planting; (3) Employment of 2,000 more foresters for field work and intensification of educational programs in timber and soil conservation; (4) Studies of the "fire ant" infestation of South Alabama as it effects the forests with the view of dealing with the problem; (5) Increased appropriations for forestry research and education in schools; (6) Study to determine new uses for low grades of hardwood; (7) Expanded research in the field of use of mechanical equipment in forestry operations; (8) Establishment of research workshops, staffed by qualified foresters at each teacher training school, with the view of educating new generations in good forestry management; (9) Expansion of the present program to wipe out little leaf disease in Alabama, Georgia, and South Carolina through the expenditure of approximately $150,000; (10) Vigorous efforts by association members to help small landowners with their forestry problems; (11) Steps to effect better forestry practices within the respective boundaries of the states; (12) Opposition to future expansion of federal ownership of forest lands without the consent of the state; and (13) Opposition to any regulation of cutting on private lands.

Progress made in Southern Forestry was praised by industry leaders but there was a divergence of opinion among timbermen and two congressmen, Rep. Frank Boykin (D. Ala.) and Rep. L. F. Sikes (D. Fla.).

Four timbermen saw a bright future for the industry and one of them, Julius McGowan, of W. T. Smith Lumber Co., Chapman, Ala., saw "no basic conflict between the lumber and paper industries."

The other three were W. E. Durham, president of the Savannah (Ga.) Lumber Corp.; H. M. Seaman, vice-president and general manager, Kirby Lumber Co., Houston, Texas; and J. H. Allen, president, Florida Pulp & Paper Co., Pensacola, Fla.

The use of salvaged trees and parts of trees for the paper industry was widely discussed and accepted as practicable in making a huge increase in pulp manufacture without cutting additional trees. The four forestry men said that in the future sawmill waste products will be the main source of supply for paper and pulp mills. They added that major paper and pulp mills used 2,500,000 trees last year but replanted twice that number.

The foresters agreed generally that there is an oversupply of timber. However, Rep. Boykin said the nation's forests aren't producing enough timber to meet the housing needs.

Reps. Boykin and Sikes appealed for greater federal participation in forest conservation and proposed the following four-point program: (1) More federal aid for fire control; (2) Enlargement of the federal program of providing low-cost tree planting stock; (3) A more intensified educational program; and (4) More foresters in the extension service to teach sound principles.

The proposals were incorporated in the resolutions adopted by the conference.

TALI Meeting Program Shaping

CHICAGO — Four technical sessions and a dinner meeting wil make up the first annual meeting of TALI (Technical Ass'n., of the Lithographic Industry) to be held April 12 and 13 in the Congress Hotel, reports Michael H. Bruno, research manager of the Lithographic Technical Foundation, Inc., and president of TALI.

Ralph M. Evans, superintendent of color quality control of the Eastman Kodak Co., will discuss "Seeing Light and Color", at the dinner meeting. He will present a lecture illustrated by more than 100 color slides covering the process of seeing.

The technical sessions will be conducted as symposia with formal papers followed by discussions and will cover platemaking, paper and ink, color and color reproduction, and photography and illumination. Commitments for papers have already been received from Dr. F. H. Frost and A. P. Reynolds of the S. D. Warren Co., on a new type of paper; Dr. J. A. Van den Akker of the Institute of Paper Chemistry, on the surface bond strength of paper; Dr. C. Zettlemoyer of the National Printing Ink Research Institute; Dr. P. J. Hartsuch, LTF, on improved desensitization and the removal of residual albumin; J. A. C. Yule of the Eastman Kodak Co., on the black printer; Frank Preucil of the Gerlach-Barklow Co., on masking; G. N. Martin, LTF, on bi-metal plates and wettability; Dr. R. C. Hunter of the Henry A. Gardner Laboratories, on the measurement of color; and G. W. Jorgensen, LTF, on a control strip for the study of tone reproduction. Other papers are anticipated on the measurement of lens flare; sensitizers other than bichromates; motor driven arc illumination, and fluorescent and incandescent sources.

There will be a nominal registration fee for the meeting and invitations are extended to all interested regardless of membership. The meeting will be held during the week of LTF's 25th Anniversary Meeting and the LTF Tri-State Technical Forum for lithographers in Illinois, Wisconsin and Indiana. Schedules are being planned so that anyone interested can attend all three meetings.

TALI is a new association organized in 1948 to foster the technology of the lithographic and related industries and provide technical men in these industries an opportunity to report results of their work, and discuss their problems. Information and applications for membership may be obtained from George W. Wilhelm, Secretary, 814 North East avenue, Oak Park, Illinois.

The officers of TALI are: President, Michael H. Bruno, research manager, Lithographic Technical Foundation, Inc.; first vice-president, Dr. Marvin C. Rogers, research director, R. R. Donnelley & Sons Co., Chicago; second vice-president, Herbert R. Leedy, Harris-Seybold Co., Cleveland; secretary-treasurer, George W. Wilhelm, litho chemist, Rand McNally & Co., Chicago. Directors are: Arthur W. Cornell, research director, Forbes Lithograph Mfg., Co., Boston; and Frank Preucel, director of photography, Gerlach- Barklow Co., Joliet, Ill.

CCDA Meet Mar. 15-16

NEW YORK—The annual meeting of the Commercial Chemical Development Ass'n., will be held March 15-16 at the Hotel Roosevelt. The business meeting, for members only, will take place on March 15. The sessions on March 16, will be open to the public.

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Robert M. Wood, salesman for Murray & Heister, Inc., (left), getting explanation of Scotch tapes in booklet held by Walter Mooney of Minnesota Mining & Mfg. Co.

U. S. Postal Department representative (center) in front of booth set up by the Washington Post-Office, examines "horrible examples" of packaging sent through the mails.

Paper Day Exhibit Pays off in Sales

WASHINGTON—Public response to its "Paper Day" exhibit in the Pan-American room of the Mayflower Hotel, September 15-16 was so productive of sales that Murray & Heister, Inc., Washington, D.C., paper jobber, is considering a similar show next fall.

The main exhibit attractions were booths which featured the latest in defense packaging together with one showing samples of matching packages for the retail trade. In the defense paper booth were export packaging materials made to United States JAN specifications such as weatherproof board, moisture vapor-proof papers, grease-proof wrapping, wood box shooks and case liners.

In the matched packages booth were specimens of matched wrapping paper, bags, gift boxes and folding boxes to give the customer individual packages of the same paper.

The U.S. Government was represented in the Postal Department's booth with a postal representative in attendance. There were exhibited specimens of improper packaging sent through the mails with their contents damaged because of defective wrapping, poor quality of paper, insufficient cordage and other obvious reasons.

Among the cooperating manufacturers who furnished booths were: American Register Co., Artistic Weaving Co., Baltimore Paper Co., Baltimore Salesbook Co., Better Packages, Inc., Cohoes Envelope Co., Columbian Rope Co., Garden-Richardson Co., General Printed String Co., Pohlig Brothers, Inc., Racquette River Paper Co., Royal Paper Corp., Sealright Co., Inc., Scott Paper Co., Southern Envelope Co., and others.

The exhibit was announced by a mailing campaign which included a personalized invitation, a three-colored prospectus and two-colored blotters.

Officers of Murray & Heister, Inc., are William M. Murray, president; and John H. Heister, vice-president and sales manager.

Duty-Free Std. Newsprint

NEW YORK—Specifications for duty-free standard newsprint as prescribed by the U.S. Treasury Department and discussed in a letter to the ANPA dated January 25, follows:

Weight: 500 sheets, each 24 by 36 inches, shall not weigh less than 30 pounds nor more than 35 pounds. Samples used in determinations of weight shall be conditioned in an atmosphere at 50 percent relative humidity and 23° C. temperature with a tolerance of plus or minus 2 in percentage relative humidity and of plus or minus 2° C. in temperature.

Thickness: The thickness shall not exceed .004 of an inch, with a tolerance of 5 percent to be deducted from the actual thickness determined to allow for swelling from the absorption of atmospheric moisture.

Rolls and Sheets: The paper shall be in rolls not less than 15 inches wide (9 inches wide to June 30, 1949) and 28 inches in diameter or in sheets not less than 20 inches by 30 inches.

Stock: Not less than 7 percent of the total fiber in the paper shall be ground wood; the remainder shall be unbleached sulphite. Also may contain 70 percent ground wood pulp and 30 percent bleached sulphate or 80 percent ground wood pulp and 20 percent bleached sulphate.

Finish: The average of 5 tests in the machine direction and 5 tests in the cross direction on both sides, moving the paper after each test, made with the Ingersoll glarimeter, shall be not more than 50 percent gloss.

Ash: Up to 6½ percent.

Degree of Sizing: The time of transudation of water shall not be more than 10 seconds by the ground-glass method or 5 seconds either by the curl method or with a Valley size tester.

Color: Must be of a color chiefly used in the printing of newspapers.

The editor of the *ANPA Bulletin* states that paper which is similar to the paper described above but which does not meet all the specifications would probably be dutiable at 1/5 cent per pound plus 5 percent ad valorem as uncoated printing paper, not especially provided for, according to tariff laws, treaties, etc., now in effect.

Alaska Encouraging Paper

JUNEAU, Alaska — The general property tax bill passed by the Territorial Legislature and signed by the governor, included an amendment allowing the tax commissioner to grant new industries exemptions up to 50 percent of the tax for a minimum of ten years. Purpose of the amendment was to encourage, among other things, development of the paper industry in Alaska.

FTC Ruling Upheld

WASHINGTON—The Supreme Court on February 28 upheld a Federal Trade Commission ruling that 41 book paper manufacturers, representing 80 percent of the industry's capacity, are guilty of restraining price competition. The court refused to hear an appeal by the Book Paper Manufacturers Ass'n., and the manufacturers, all members of the association.

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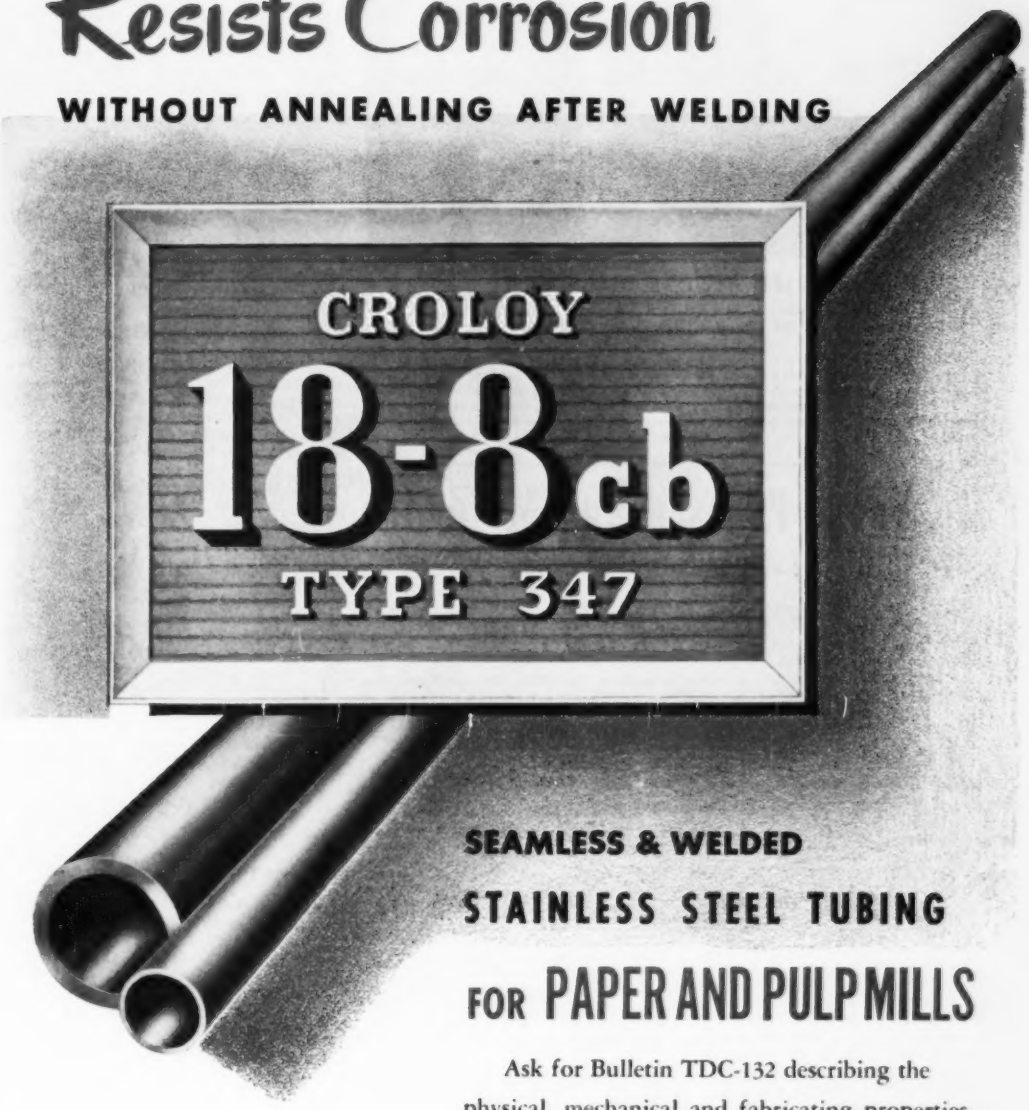

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MANDO REALIGNS MIDWEST TERRITORIES

Changes in several sales territories so that each will have its own headquarters have been made by the Minnesota & Ontario Paper Co., Minneapolis, R. O. Warner, sales manager of the paper division reports. . . . L. W. Newquist, (left) who has represented the firm in the southwest, working out of Minneapolis, now has headquarters in St. Louis. . . . Ray Strindmo, (center) for several years chief clerk in the Minneapolis office, is now headquartered in Kansas City, Mo., as sales representative. Ralph E. Lundborg succeeds Mr. Strindmo at Minneapolis. . . . Jack Hall (right) who recently became a member of the Chicago sales office after many years of Mando service, will represent the firm in the Chicago area, of which Paul Joslin is manager.

Pulp Goods Pressed and Molded

Calendar Year 1947

WASHINGTON—Manufacturers in the Pulp Goods, Pressed and Molded Industry shipped products valued at $16.1 million during 1947, according to preliminary figures released by the Bureau of the Census, Department of Commerce on February 21. This represents an increase of 325 percent over the $3.8 million value of products reported by this industry in 1939, when the last Census of Manufactures was taken. Value added by manufacture in the industry during 1947 amounted to $9.6 million, an increase of 320 percent over the $2.3 million value added in 1939. Value added by manufacture is calculated by subtracting cost of materials, supplies, containers, fuel, purchased electric energy, and contract work from the value of products. For some purposes, particularly for comparing one industry or group of industries with another, it is the most satisfactory Census measure of the economic importance of an industry. Average employment in the industry amounted to 1,748 in 1947 as compared with 856 in 1939. Salaries and wages paid to all employees increased 390 percent, from $1.0 million in 1939 to $4.9 million in 1947.

These statistics are derived from a preliminary tabulation of manufacturers' reports in the 1947 Census of Manufactures. Final and more detailed figures will appear in the Census publication, "Coated Paper, Envelopes, Paper Bags, Paperboard and Fibre Containers, Pulp Goods, and Miscellaneous Converted Paper Products," which will be published and offered for sale by the Superintendent of Documents in the near future. Similar preliminary and final releases will be issued for other manufacturing industries during the next few months. Totals for the United States and for each of the States will be issued in April. These will be followed by detailed statistics for States, metropolitan areas, counties, and cities.

General Statistics for the Pulp Goods, Pressed and Molded Industry, U. S. Totals: 1947 and 1939

(Money figures and man-hours in millions)

	1947	1939
Establishments	19	14
All employees:		
Number (average for the year)	1,748	856
Salaries and wages (total)	$4.9	$1.0
Production and related workers:		
Numbers (average for the year)	1,482	701
Man-hours (total)	4.2	n.a.
Wages (total)	$3.8	$.8
Value added by manufacture[1]	$9.6	$2.3
Cost of materials, fuel, electricity, and contract work	6.5	$1.5
Value of shipments[2]	$16.1	$3.8

n.a. Not available.

[1] For 1947, value of shipments less cost of materials, fuel, electricity and contact work. For 1939, value of production less cost of materials, etc.

[2] Value of production for 1939.

Prepared by Bureau of the Census, Industry Division, Wood Products Unit.

UK Bonus to Finland

LONDON, Eng.—Britain is paying Finland £40 ($160) a ton for newsprint which Finland is willing to sell to the United States for £28 ($112) a ton, Anthony Hurd, Conservative, asserted in the British House of Commons, recently. He asked if the government would allow British mills to renew contacts with producers of pulp in Scandinavia.

Harold Wilson, president of the British Board of Trade, could not confirm off-hand the figure of £40, but said certain Scandinavian countries were selling for dollars at lower prices than to non-dollar countries because of their need for hard currency.

Asked how the current price charged for newsprint in Britain compares with the world price, Mr. Wilson said prices are not standard throughout the world.

"It is encouraging to note that our prices compare favorably with those of Scandinavian producers, though it is above those at which paper can be bought on long-term contracts in Canada," he added.

Canadian Carloadings

OTTAWA—The Canadian Government reports car loadings on the Canadian railways of woodpulp and paper reached a cumulative total of 26,665 cars from the beginning of this year until the week ended February 12 as compared with 26,342 cars in the similar period last year ending week of February 14, with the Eastern Division accounting for 23,324 cars this year as against 22,852 cars a year ago and the Western Division for 3,341 cars as compared with 3,490 cars last year.

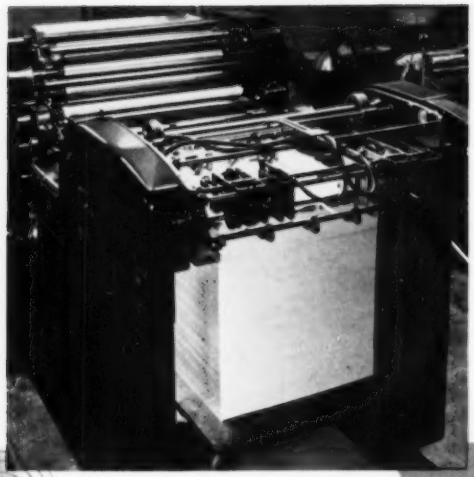
Car loadings of woodpulp and paper declined to 4,367 cars in the week ended February 12 as against 4,670 cars in the preceding week, though in the similar week last year this amounted to 4,486 cars ending week of February 14. The Eastern Division accounted for 3,835 cars in the week ended February 12 as against 3,911 cars in previous week or 3,911 cars in the corresponding week last year and the Western Division for 532 cars against 550 in the previous week and 575 cars in the similar week of 1948.

Patent for Sale or License

WASHINGTON—A process for making chlorine and sodium sulphate, patented in August, 1941, is listed among the latest register of patents for sale or license, by the Department of Commerce.

The process is described as follows:

Pat. 2,254,014. Gases containing sulphur trioxide are passed in contact with sodium chloride at temperatures below 150°C., but high enough to produce sodium chlorosulphonate which is removed from the reaction zone and heated. Sodium sulphate and a gaseous mixture of chlorine and sulphur dioxide are produced. The sodium sulphate is separated and the gaseous mixture and oxygen passed through a contact sulphuric acid converter to produce a mixture of chlorine and sulphur trioxide. The sulphur trioxide is absorbed by contacting the mixture with sodium chloride, the gases removed and chlorine recovered from the resulting chlorosulphonate.



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Engineered Washer Instrumentation Contributes to Maximum Chemical Recovery

By E. A. MURPHY

Minneapolis-Honeywell Regulator Co., Brown Instruments Division, Philadelphia

Maximum recovery of process chemicals is a major factor in the successful performance of the sulfate pulping process. Although the greater portion of this operation takes place in the recovery plant, the efficiency of the pulp washing equipment determines to a great extent the total amount of chemical which can be reclaimed.

The manufacturers of pulp washing equipment were quick to recognize this fact as evidenced by the design features and high operating efficiency of modern rotary vacuum pulp washers. As is usually the case with the advent of high speed continuous processing equipment, the accurate measurement and close control of pertinent process variables become significant factors in achieving peak operating efficiency. In the washing system, for example, the following variables exert an influence on the over-all operation of the entire process:

(1) liquor flow to evaporator storage; (2) wash water flow to each line; (3) liquor flow to each line; (4) temperature of first stage liquor; (5) temperature of hot wash water; (6) Baumé of first stage liquor; (7) levels in liquor storage tanks; (8) pulp slurry levels in washer vats; (9) flow of stock to first washer; and (10) sheet thickness on washer drums.

Although not specifically a part of washer instrumentation, the measurement and control of both consistency and level within the blow tank are also essential to smooth continuous washer operation. In a like manner the recovery of heat from the digester blow frequently supplies hot wash water and can logically be considered as a factor pertinent to pulp washing.

The discussion of complete washer instrumentation will be broken down into various phases of the washing process, with explanations of the methods of operation of associated measuring systems and reasons for their employment.

Consistency Control

Consistency of the stock within the blow tank is automatically controlled by an ElectroniK potentiom-

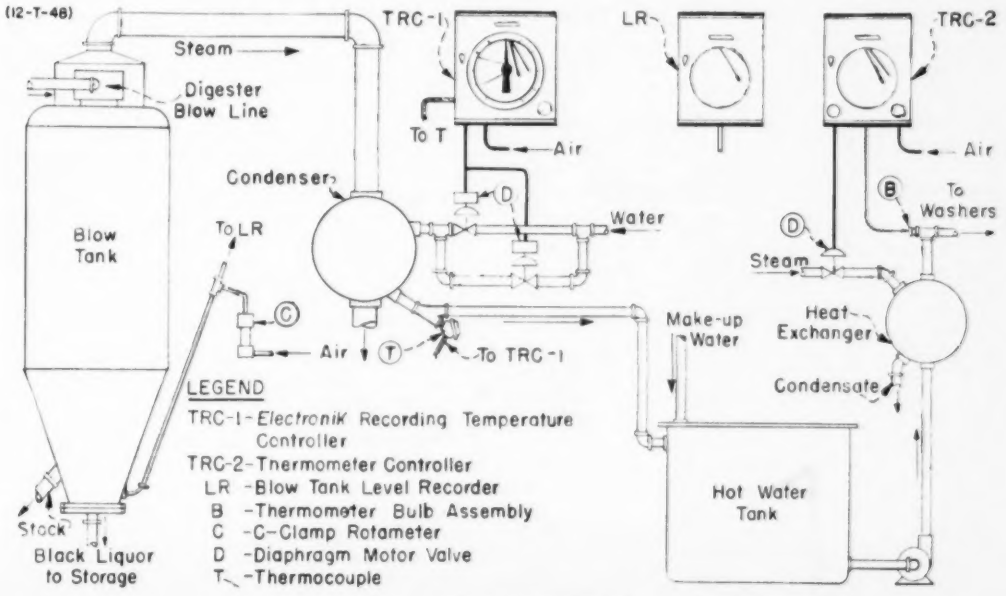
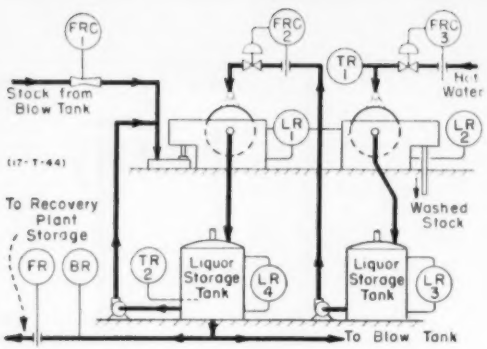


Figure 1—"Blow Tank Instrumentation"



LEGEND
BR – Baumé Recorder
FR – Flow Recorder
FRC – Recording Flow Controller
LR – Liquid Level Recorder
TR – Temperature Recorder

Figure 2—"Schematic drawing of partial washer instrumentation."

eter which measures the load on the agitator motor and by pneumatically positioning a valve controlling the flow of dilution liquor to the tank holds this motor load at a constant value. A rather unique measuring system is employed to achieve this control. Through the use of a device known as a *thermoverter*, the electrical load on the drive motor is translated into heat energy. This heat is measured by small thermocouples which are connected to the potentiometer controller.

When the stock consistency increases above the desired value, which is set on the index of the control instrument, the load on th agitator motor increases. This increase is accompanied by a proportionate increase in the temperature produced by the thermoverter, and the pen of the recording controller begins to move upscale. As soon as the instrument pen begins to move above the set point, corrective control action is initiated, i.e. the pneumatic control unit within the instrument begins to open the dilution liquor valve.

As a result, the consistency begins to decrease and the recording pen, moving back toward the set point, actuates the control, thus gradually throttling the dilution valve. Since proportional control is used, small variations in consistency cause small movements of the dilution valve, while large variations occasion proportionately larger valve movements. Automatic reset assures precise control regardless of load changes.

Blow Tank Heat Recovery

For the purpose of recovering heat from the digester blow another ElectroniK controller is employed. In this case, it is a potentiometer pyrometer controller having its thermocouple inserted in the hot water line leaving the condenser. As shown in Fig. 1, this instrument, also a pneumatic controller, operates valves controlling the flow of cooling water to the condenser. The use of two valves and two water lines (one large and one small) makes it possible for the system to take care of the relatively small load on the condenser which occurs during the normal digester relieving or gassing-off cycles as well as the lage load resulting from a digester blow.

During the gassing-off cycle, the instrument throttles the smaller valve to obtain a water flow through the condenser capable of maintaining the hot water leaving the condenser at the desired temperature. When a digester is blown, the load on the condenser increases tremendously and the controller opens the smaller valve wide and throttles the larger valve to obtain the required results.

The high sensitivity and rapid control action of the ElectroniK controller are highly desirable on this application because of the short time required to complete a digester blow. Thermometer controllers are sometimes used in place of the electronic type instrument, but the measuring lag inherent in thermometers results in the loss of an appreciable amount of recoverable heat.

As illustrated in Fig. 1, some mills employ heaters to provide sufficient hot wash water when the blow tank heat recovery system cannot supply the entire demand. Temperature of water leaving the heater is controlled by a recording thermometer with its temperature sensitive bulb in the water line to the washers.

A record of stock level within the blow tank aids the operators in determining and controlling the washer operating rate. An air purge type liquid level recorder, also shown in Fig. 1, supplies this record. The instrument, essentially a pressure recorder callibrated in liquid level units, measures the pressure required to force a small flow of air into the stock at the point of minimum level. Since this pressure is directly proportional to the height of the stock in the tank, it is possible to calibrate the instrument directly in liquid level units.

Stock Flow to Washers

Completely automatic control of stock flow to the washers materially aids the operators in establishing and maintaining other process variables at their optimum operating values. This control is readily obtainable through the use of a differential pressure type flow meter and a venturi tube. The latter comprises an artificial restriction in the stock flow line, and establishes a differential pressure which bears a definite relationship to the rate of flow.

An electric meter body continuously measures this differential pressure and transmits its readings electrically to a recording flow controller mounted on the master washer room instrument cubicle. This instrument actuates an air motor which governs the output of the stock pump supplying the washers. The venturi tube and meter body are shown schematically in Fig. 2 while the recording controller can be seen in Fig. 3. A water purge system prevents the pulp fibers from clogging the measuring system.

Temperatures of Wash Water and First Stage Liquor

The efficiency of the washing operation, and consequently the amount of chemicals recovered, are strongly influenced by wash water and wash liquor temperatures. Should these temperatures be too low, for example, an excessive quantity of wash water is required. This not only causes unnecessarily high dilution of the black liquor, but increases the amount of undissolved chemical carried away with the stock.

Fig. 2 shows schematically that both temperatures are recorded. Although not evident from the drawing, which is highly schematic, indicating pneumatic temperature transmitters with bulbs located in the hot wash water line and in the first stage liquor storage tank provide on-the-spot temperature indication, and transmit their readings pneumatically to a single two-pen recording receiver on the master cubicle (see Fig. 3). When desired, either or both indicating transmitters can be supplied as controllers.

Flows of Wash Water and Liquor

Measurement and automatic control of water and liquor flows to the showers provide additional valuable operating aids. Once the correct flows are established for a given set of operating conditions, they must be maintained within rather close limits in order to achieve maximum chemical recovery and uniform washing efficiency.

Pneumatic transmission of instrument readings is also utilized in this case. Indicating pneumatic flow transmitters located adjacent to the washers permit ready inspection of both flows, while recording-controlling receivers on the master cubicle provide continuous chart records and automatic control. When desired, the control functions can be incorporated in the indicating transmitters, while the instruments on the master cubicle operate as integrating recorders, supplying indication and record of total flow units as well as rates of flow.

Where electrical transmission is preferred over pneumatic, electric meter bodies can be located at the points of measurement. It is a simple matter to connect two instruments (an indicator and a recording controller) to each meter body in parallel electrically.

Liquor Flow to Evaporator Storage

A record of flow to evaporator storage is also desirable. In this case, an electric meter body is used to facilitate remote mounting of the recording instrument which can be supplied as an integrator to provide indication and record of total liquor flow to evaporator storage.

Liquor flow is normally controlled by a liquid level controller on the first stage liquor tank. This instrument continuously measures level within the tank and, by means of a pneumatic control unit, regulates a diaphragm motor valve on the outlet line to maintain this level at the desired value. The control unit is supplied with a wide proportional band, i. e., causes a very small valve movement for a given deviation of the recording pen from the set point, and is, therefore, able to maintain tank level within very close limits.

Liquor Level in Storage Tanks

Liquor levels within the various storage tanks can be measured accurately by either of two methods. When the tanks are under atmospheric pressure and there is no likelihood of an accumulation of foam giving a false

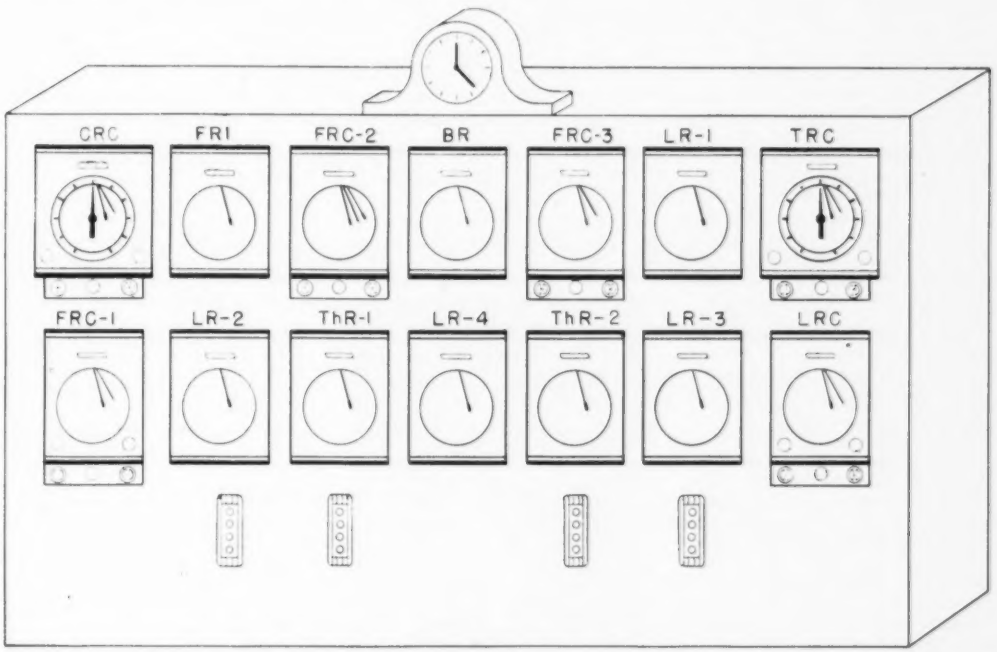


Figure 3—"Master control cubicle for pulp washing system." Legend: CRC Blow Tank Recording Consistency Controller; FRI Integrating Flow Recorder (Liquor to Evaporator Storage); FRC-2 Recording Flow Controller (Wash Water to Showers and Wate Temperature); BR Baume Recorder with Temperature Pen; FRC-3 Recording Flow Controller (Wash Liquor to Showers); LR-1 Blow Tank Level Recorder; TRC Recording Temperature Controller (Blow Tank Heat Recovery); FRC-1 Stock Flow Recording Controller; LR-2 Washer Vat Level Recorder; THR-1 Sheet Thickness Recorder (#1 Washer); LR-4 Liquor Storage Tank Level Recorder; THR-2 Sheet Thickness Recorder (#2 Washer); LR-3 Washer Vat Level Recorder; LRC Liquor Storage Tank Level Controller.

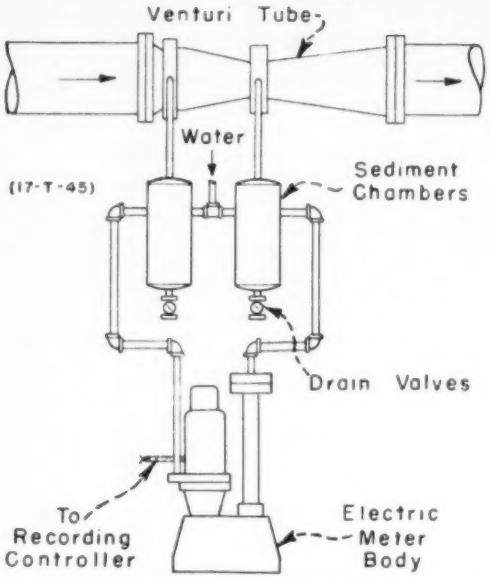


Figure 4—"Water purge system for stock flow measurement."

head, air purge type systems can be used. These systems are identical in operation to the blow tank level system previously described.

When the tanks are under a partial vacuum or pressure or when foam within the tanks may cause erratic reading of pressure type instruments, differential pressure type liquid level instruments are used. In a system of this type, a conventional differential pressure type meter body (the same as normally employed to measure flow) comprises the primary measuring element.

Either a mechanical or electric type meter body can be used. In the case of the former, an indicating pneumatic transmitter is normally located adjacent to the point of measurement, while a recording or a recording-controlling receiver is mounted on the master cubicle. When an electric meter body is employed, readings are, of course, transmitted electrically to the panel-mounted recorder.

Pneumatic transmission is frequently preferred because of the ease with which small dial-type indicating gauges can be incorporated in the system in parallel with the master recorders. These gauges are mounted in compact console type cubicles located for the convenience of the washer operators. Similar gauges can be utilized with instruments measuring flow, temperature or any other variable when pneumatic transmission of instrument readings is employed.

Baume of First Stage Liquors

A continuous record of the Baumé of the first stage liquor provides a ready means of checking on the adequacy of hot wash water flow to the final stage showers. Operation of the instrument which continuously measures and records specific gravity, is based on the difference in the pressures required to bubble air through a reference liquid of known concentration and through a sample of the liquid whose Baumé is being measured. This pressure differential, which varies with the specific gravity of the liquor, is measured continuously, and these measurements are transmitted electrically to a recording instrument.

It is possible to incorporate in the recording instrument a pneumatic control unit which will automatically position the set point index of the flow controller regulating the flow of hot wash water to the final stage showers. When the measured Baumé falls below the value set on the controller, this instrument moves the set point index of the wash water flow controller an appropriate distance downscale — thereby reducing the amount of wash water and consequently increasing the concentration of the first stage liquor. Since Baumé is affected by temperature, the recording instrument usually includes a temperature pen.

Pulp Slurry Levels in Washer Vats

Since the location of the showers is based upon the amount of submergence of the washer drums, it is evident that any departure of the pulp slurry from the specified operating levels within the washer vats will adversely affect over-all washing efficiency. Level within each vat is measured continuously by an airpurge system and recorded by an instrument on the master control cubicle.

Sheet Thickness Recorders on Washer Drums

Continuous measurement of sheet thickness on the washer drum is highly desirable in the operation of a rotary vacuum washer. This measurement is obtainable through the use of a system which resembles in principle the operation of the electrical transmission system for flow readings. A roller of sufficient size and mass to overcome the effects of small surface irregularities rides in contact with the sheet on the washer drum. This roller is free to move in a direction perpendicular to the sheet surface at the point of contact, and is connected mechanically to the armature of an inductance bridge transmitter.

In this way, any change in sheet thickness is reflected by perpendicular movement of the roller (with respect to sheet surface at point of contact) which in turn, repositions the armature within the transmitter coils. Since the transmitter coils form part of an inductance bridge (the receiver coils comprising the balance of the bridge), movement of the transmitter armature unbalances the bridge, and the receiver armature takes up a new position restoring the bridge to a balanced condition. The receiver armature is linked mechanically to the recording pen. Thus, any movement of the roller is reflected by a corresponding movement of the recording pen thereby providing a continuous record of sheet thickness.

Purging Prevents Clogging by Stock or Liquor

A water or air purge system is normally employed when measuring stock or liquor flow or when using a differential pressure type liquid level recorder on the liquor storage tanks. Although black liquor for all practical purposes exerts no harmful corrosive effect on an electric flow meter body, there is the possibility that over an extended period of time the total solids present in the liquor will cause partial clogging resulting in erroneous instrument readings. When measuring stock flow, it is obvious that individual fibers must be prevented from clogging the pressure taps and in time the meter body itself.

The purge system shown in Fig. 4 is typical of one of the methods employed to eliminate clogging of the pressure taps and meter body. As indicated, a small flow of water is supplied at constant and equal pressure to two sediment chambers interposed between the pressure taps and the meter body. The water fills the meter body and connecting piping, and, since equal pressure is applied to each side of the meter body, exerts no effect on the meter reading. A water pressure slightly in excess of the maximum expected pressure in the stock flow line is maintained, resulting in a small but constant flow of water from the pressure taps into the stock flow line. This flow keeps pulp fibers from entering and clogging the pressure taps.

In cases where the addition of even a small amount of water to the measured medium proves objectionable, air can replace water as the purging medium. In the case of the differential pressure liquid level recorders on the liquor storage tanks, for example, air at constant pressure can be used. Externally, the purge system will resemble that shown in Fig. 4. Compressed air at a constant and equal pressure is admitted continuously to each of the sediment chambers and flows through the connecting piping and out of the pressure taps into the flow line. This compressed air fills the meter body, the connecting piping to the sediment chambers, and the chambers themselves.

Various modifications to the above purging systems are frequently employed. In general, however, the principles involved and the results obtained are the same as those just described.

Summary

The application of instrumentation to pulp washing systems as a means of further increasing chemical recovery and obtaining continuous production of clean pulp is widely recognized both by mill operators and manufacturers of pulp washing equipment as a practical method of increasing the over-all efficiency of the sulfate pulping process. The variety of industrial instruments now available and the numerous ways in which these instruments can be employed make it possible to engineer a system of instrumentation capable of meeting the requirements of any pulp washing system.

Since instrument manufacturers maintain staffs of engineers skilled in the application of instruments and controls to the solution of specific control problems, it is not necessary for a mill operator to be thoroughly familiar with the rather specialized and complex field of industrial instrumentation. With a knowledge of pertinent process variables and results desired, the mill operator need only request the assistance of these engineers who can then recommend the instrumentation necessary to achieve these results. When the complete system is worked out to the satisfaction of the mill operator, it can, when desired, be supplied on a master cubicle with all instruments and control devices such as push-buttons and signal lights already mounted, and with all behind-the-panel piping and wiring completed. This, of course, greatly simplifies the problem of installation and results in a material time saving for mill personnel.

The instrumentation described in this article serves to exemplify the many benefits obtainable from the intelligent application of industrial instruments. Similar benefits are at present being realized in every department of the mill from the digester house to the finishing room, and industrial instrumentation is playing a vital role in the mill's major problem—the problem of producing more paper of higher quality at minimum operating cost.

St. Regis Starts Tacoma Kraft Paper Mill

Integrated operations on the Pacific Coast have become a reality for St. Regis Paper Company with completion of its new kraft paper mill at Tacoma, Wash., representing many departures in mill design and operations.

The mill has functioned smoothly since it was started in January. Its paper machine is designed to produce multiwall kraft paper 180 inches wide at a rate of 2,000 feet per minute, the equivalent of 240 tons daily.

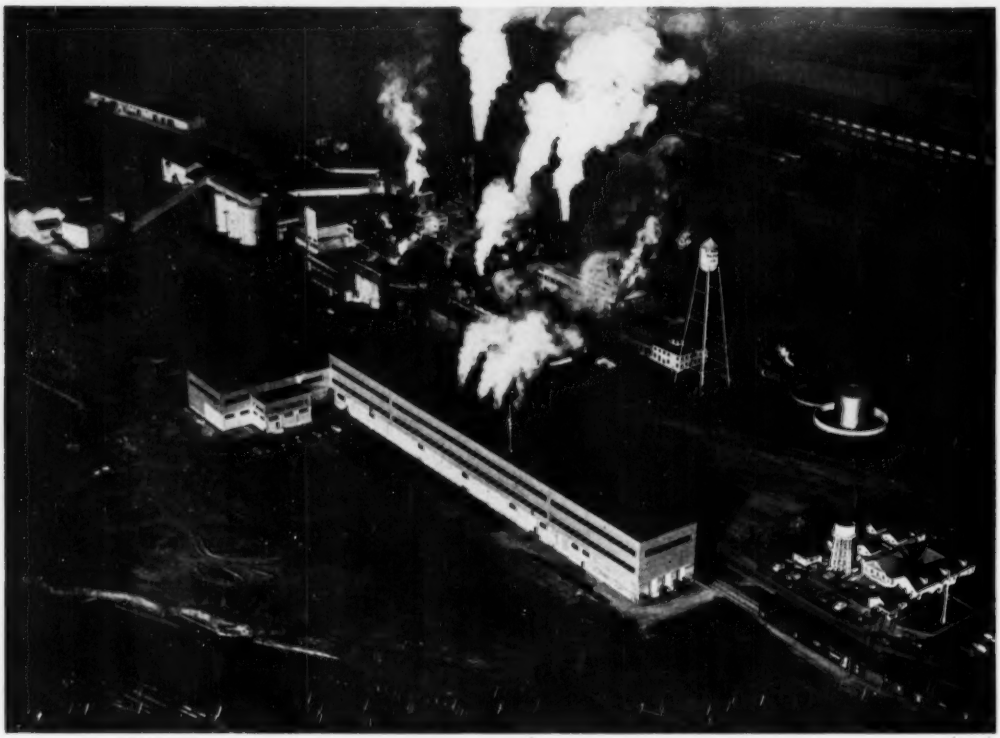
Part of the pulp manufactured by St. Regis at its 300 ton Tacoma sulphate pulp mill now is converted into paper at the adjacent paper mill, and then into multiwall paper bags at the company's three western plants, to meet the mounting industrial packaging needs of the Pacific Coast. The bag plants are located at Seattle, Los Angeles and Emeryville (soon to be replaced by a new bag plant at San Leandro, Calif.). Balance of the pulp continues to be available for the company's pulp customers. A modern barking plant designed to improve the efficiency of the pulp mill was placed in operation a few months ago.

To round out the integration and to assure its new facilities of sufficient raw materials, St. Regis has acquired in recent years substantial timber resources in the Pacific northwest. In announcing initial operations of the company's eighth kraft mill, construction of which started in December, 1947, St. Regis chairman and president, Roy K. Ferguson, said the location offered an exceptional combination of geographical and industrial advantages making the integration possible. He added that the current phase of the St. Regis program of integration, modernization and expansion had virtually been completed.

ROY K. FERGUSON
President
St. Regis Paper Co.

Kraft Paper Mill

The Tacoma kraft paper mill is housed in a semi-detached new building, 612 feet long. Construction up to the machine room floor is of reinforced concrete, and above this of steel with welded trusses enclosed in Robertson steel panel corrugated siding. The siding consists of a flat inner surface separated from the corrugated outer surface by two inches of glass wool. Corrugated glass with stainless steel fittings is used for continuous windows the full length of the building at two levels.



Aerial view of St. Regis Paper Co. facilities at Tacoma, Wash. The new kraft paper mill, placed in operation in January, is seen in the foreground. Adjacent to the mill in the background (left) is the barking plant and (center) the sulphate pulp mill.

Refiners

Several stages of refining, through 10 Jones Majestic jordans in various combinations, make use of a total 125 tons of tile lined chest capacity. The jordans are equipped with inkless recording wattmeters and are inter-connected by a piping system fitted with 45 DeZurik two and three way valves. Piping throughout the mill is Johns Mansville Transite with fabricated steel flanges which do not come in contact with the stock at straight connections, stainless steel elbows or tees. A color code, employing a dozen colors, designates all pipes and conduit, depending on the piping function, such as: for stock, water, air, or 440 and 4,100 volt direct current.

Paper Machine

The Pusey & Jones paper machine is equipped with a Fourdrinier wire 180 inches wide by 120 feet long, having a 44-inch diameter Downingtown suction couch containing two boxes 12 inches and seven inches wide. There are two 36 inch rubber-covered suction presses also manufactured by Downingtown. Following is a smoothing and creping press and a dryer section, divided into four parts, containing 76 paper and 14 felt dryers. The calender stacks, a drum reel and a Pusey & Jones winder complete the machine set up.

Designed to operate up to 2,000 feet per minute, the machine is driven by General Electric direct current motors capable of developing 2,800 horsepower. The motor generator sets and controls for the drive are housed in a 180 by 20 foot air-conditioned control room maintained at a slight air pressure to repel dust and lint from the delicate instruments. The conditioning system for the room, like all other air and moisture removal systems in the mill, was designed and installed by the Drew Engineering Company, of Portland, Ore.

Size Emulsifying System

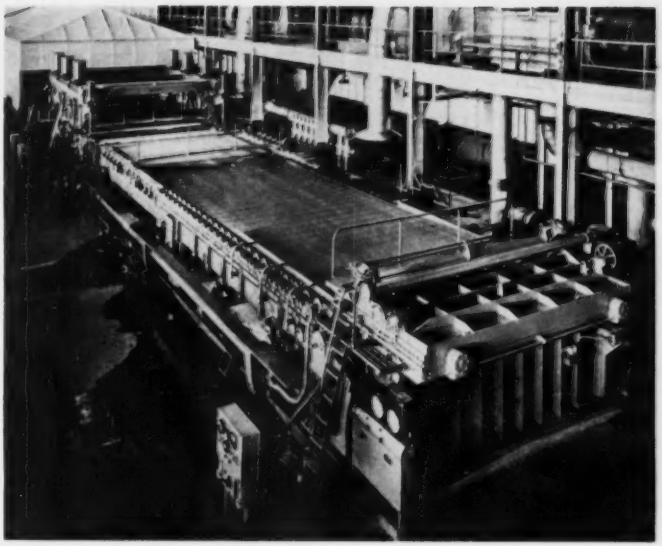
Even a casual trip through the new mill reveals many innovations, such as: The Hercules Powder Company's automatic and continuous emulsifying system for size, one of the first in the country and the only one so far installed in the West. The Pusey & Jones flow spreader and pressure inlet is the first in that part of the country. All mechanisms for handling the Fourdrinier, for wire changes, and the like, are driven by hydraulic motors, as are the press and dryer doctor oscillators. The 30,000 gallon per minute fan pump maintains a constant pressure in the flow spreader inlet through a magnetic clutch controlled from the machine tender's main panel. All dry and broke is conveyed automatically into a Dilts hydrapulper located under the machine. The hydrapulper is controlled from a panel board near the calenders. It probably is the first application of the broke handling method for kraft, and the first for any kind of stock in the West.

Barking Plant

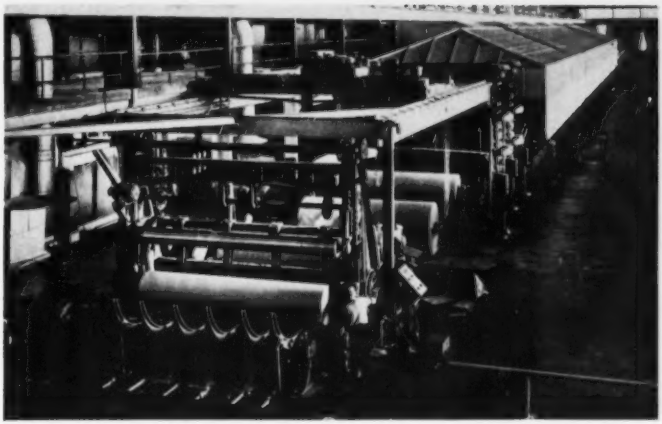
The barking plant is virtually run by push buttons and hand levers, by an operator stationed in a glass cage commanding excellent visibility of all operations.

The plant, unique from the standpoint of efficient operations packed into a relatively small area, debarks seven kinds of logs, such as rafted,

trunk and reclaimed logs, hydraulically or mechanically. From the barkers, logs move by conveyors to the chippers for reduction to chips in a matter of seconds. Three barkers installed include two hydraulic barkers capable of handling logs sized 26 feet long, five feet in diameter, and four feet long, 14 inches in diameter, and a mechanical barker for smaller sized logs. Water pressure for the hydraulics runs about 1,400 pounds. Five chippers ranging in size from 72 inches to 153 inches and operating at upwards of 300 r.p.m. reduce a given log of average size in 12 seconds. Equipment within the barking facility is arranged for straight line operations, the logs moving through the various stages butt to butt. Powerful electric motors drive the pumps and provide other power requirements. .



Wet end of the Pusey & Jones paper machine installed in the new kraft paper mill of St. Regis Paper Co., Tacoma, Wash. which went into production in January. Stock reaches the 120 foot wire through a flow spreader and pressure inlet (right), eliminating the conventional headbox.



Kraft paper passes through 76 paper and 14 felt dryers and the calender stack and is rolled onto Pusey & Jones winders at the new kraft mill of St. Regis Paper Co., Tacoma, Wash. The machine is designed to run at the rate of 2,000 ft. per min.

Initial Protection of Inventions*

By FRANK MAKARA[1]

Failure to keep good, authenticated records of conception and reduction to practice may often result in loss of an invention by the first and original inventor. In cases of interference, for example where two substantially identical inventions are claimed in pending applications before the Patent Office, only correctly prepared evidence will be received. Reliance on evidence in such interference cases, and also in law suits on patents, on the question of invention, cannot be had, unless it is corroborated. Thus on the question of the date of conception, convincing proof of its veracity and integrity are essential. For this reason an inventor's own testimony and non-witnessed records are given little weight. It is not that all inventors are untrustworthy, but rather because a few dishonest individuals may allege the preparation as of an early date or prepare false records regarding the actual date of conception.

Where there is interference in the Patent Office between two substantially identical inventions the party filing his invention first is the Senior Party and the subsequent party to file is the Junior Party. It is possible to have three, four, five or more inventors in interference, and the question of who was the original and first inventor must be determined in order to make an award of priority. For the law is that the patent is to be awarded to the first and original inventor and not necessarily to the inventor who first files. Since the first to file is presumed to be the first inventor, only clear and convincing evidence of another earlier inventor is admissible to upset this presumption.

The earlier inventor must show prior conception to the senior party's filing date and also diligence in actually reducing the invention at a time prior to senior party's filing date. In the above example it is assumed that the

* The third in a series of three articles on patent procedure by this author.

[1] Patent attorney, Mann and Burrowes, New York City.

senior party asserts no date earlier than his filing date for his conception and reduction to practice. The senior party can of course assert earlier dates which he would then have to prove. It must be obvious that the temptation to make self-serving false statements and records, unwitnessed and unpublicized at the time of their alleged making, is very great. Hence any testimony, which might have been falsified, is looked upon with suspicion and given little or no weight as evidence by the adjudication tribunal. This is so even if the inventor be of great repute and of unquestionable honesty.

It is therefore seen that an inventor best protects his invention by publicizing it to his friends. A disclosure to the inventor's friends must be so complete that they understand the principles of the invention, so that they can testify that on a certain specified day they were told about the invention and can recite from memory (with or without tangible records for refreshing their memory) what the invention was. For greater security, an inventor should explain his invention to trusted friends and have these friends witness the written record and sketches as follows: — "Read and understood," — followed by a complete signature and address of the signer together with the date. Then in case of dispute as to the date of conception the witnesses can verify the facts from memory.

If the facts and testimony are on the side of the first and original inventor, he can ask the Patent Office to declare an interference even with an issued patent, provided the filing of the first inventor's application along with the request for such interference occurs before one year has elapsed since the issue of the allegedly interfering patent. If over one year has elapsed since the issuance of the patent before the first inventor files his application, then the statutory bar prevents the second inventor from filing his application and he is thus effectively precluded from ever receiving a patent on his invention. It may well be that in such cases the first and original inventor could not practice his invention without a license from his adversary.

Good records are obviously valuable to prove dates and facts where the inventor endeavors to sell his invention to unscrupulous promoters or companies, that, on learning of the invention, immediately file their own applications or otherwise appropriate it, as by manufacturing the product.

Keeping of records in a bound note book, not loose leaf, and containing consecutively numbered pages, is recommended. Loose-leaf notebooks can be altered too easily, hence are looked upon with suspicion by any adjudicating tribunal. Pages that are not favorable to a case could be destroyed and newly prepared pages containing favorable testimony could be inserted in such loose text books.

Where data is entered in a notebook each page should be signed by the inventor at the bottom of the entered data along with the date. This data should be witnessed as above described, if of value as to conception or reduction to practice of the invention. A well kept notebook should not have large gaps of unused sheet space. It is conducive to belief that subsequent matter may have been added to the prior entered data. Dating an entry before starting the entrance of data, much as is a personal letter dated, is a good and recommended practice. For removing doubt as to dates the month, day and year should be written out rather than abbreviated in numerical form. Thus 1/8/48 though ordinarily meaning January 8th, may according to the habits of some people, mean the first of August. Unused portions before and below dated insertions should be crossed out by appropriate x marks.

In the case of conception of an invention a detailed discussion of the solution and of the facts leading to the solution are advised. A mere set of sketches, unexplained and without dimensions are apt to be looked upon with suspicion. Facts as to temperatures, pipe sizes, pressures, etc, should appear on the sketches if of importance to an understanding of the invention. Calculations, even though not esthetic, should also be in the notebook and when errors are made they should be crossed out (with the error preferably dated and signed) and not removed by ink eradicators. Anything that is helpful to understanding should be entered in the notebooks, but personal codes such as "R" meaning "rejected" or "NG" meaning results were "no good" are bad, since code words must be explained to a suspicious adjudicating tribunal.

Also should one spill and lose some chemical after its entry has been made, a notation to this effect should be made, similarly if the reaction flask breaks, etc.

It is advisable in writing the notebook to use permanent black (carbon) inks or secondarily, indelible pencils. Some companies have bound notebooks containing double sets of consecutively numbered pages. In using these a carbon is placed between sheets before entery of any writing. The second sheets are perforated along the edge and can be ripped out and used as a company record, whereas the book itself when filled can be stored away in vaults for future use as evidential material.

When finally the invention is to be written up as a disclosure for transmittion to a patent attorney it is advisable to type it up single space and with any errors crossed out and signed and dated. The method of writing "Page —of—pages" on the top of each sheet and appropriately inserting the correct numerals is a good practice and is followed by the Patent Office itself in its latest Manual of Classification for each class, therein.

A good invention disclosure should be an "amateur specification" following the lines of a patent disclosure and should state the object of the invention, broadly what the invention "relates to," describe the different sketch views, and how the device works and what it is good for, i.e. its function and utility. All equivalents of the various elements known to the inventor should be inserted broadly and narrowly and sufficient examples of its operation, particularly if a chemical invention should be given so as to bound the upper and lower limits of the scope to be covered in the claims.

When the typed disclosure is finally prepared it should be permanently bound by rivets, grommets or otherwise. Patent Office practice for foreign applications require them to be ribboned and the ribbon sealed with sealing wax. The practice of notarizing each typed sheet (or of witnessing), while cumbersome, is recommended where the invention is of importance. In general the greater the publication the greater are the number of witnesses that can testify as to the facts surrounding a given circumstance, and the greater is the evidentiary proof and value of the facts in question.

TECHNICAL DEVELOPMENT

Paper Trade Journal, in this section, makes space available for discussion of technical and operating problems. Space is also available for the presentation of independent studies and research on technical and engineering subjects. Feature stories of paper mills, converting plants and inter-related industries will be included. An invitation is cordially extended to all who are qualified to discuss these subjects. Original manuscripts submitted exclusively to Paper Trade Journal and found suitable for use in this section will be paid for immediately upon acceptance. Submit manuscripts to E. P. McGinn, Industrial Editor.

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Trends

Office of the PAPER TRADE JOURNAL,
Wednesday, March 9, 1949.

Wood Pulp

Interested consideration is being given by U.S. buyers to Swedish second quarter prices made known during the week at the following basic figures: Bleached Sulphate, Softwood, $137.50/140.00; Bleached Sulphate, Hardwood, $130.00; Unbleached Sulphate, $112.50; Bleached Sulphite, Softwood, $132.50; Unbleached Sulphite, $120.00/122.50; per ADT, on dock Atlantic ports with $7.50 maximum freight allowance, gross. Finnish prices not yet made public are understood to be within competitive range. Some conjecture is set afloat by the delay of some Swedish mills in releasing bleached sulphite prices. Neither have Norwegian bleached sulphite prices been announced. However, inasmuch as dealers here see ample supplies of U.S. bleached sulphite available, only mild interest is expressed.

Softened supply in the Southern kraft market is held responsible for price cuts made during the week, rather than Scandinavian prices. However, bleached Southern kraft is now priced at $132.50, and unbleached is generally obtainable at $95 delivered. Northern bleached kraft for the second quarter is leveled to the one price of $136 following reduction of the $145 price.

Canadian prices, already announced at first quarter levels, are reported to be holding firm. Whether they can continue to do so is said to be the question Canadian producers must settle for themselves before second-quarter buying gets under way.

Export Outlook

Ecuador

Outlook for the sale of paper in Ecuador by U.S. exporters continues to be excellent despite increasing competition from Europe, according to OIT's reporter. Restrictions of the current Emergency Exchange Law limit importations to primary paper, with the likely result that domestic industry will be stimulated to manufacture products which cannot be imported.

Paper imports are handled through local agents or by direct purchase from merchants in other countries. Preferred method of payment is stated to be by irrevocable letter of credit, although some larger users purchase on account from some U.S. firms on long-established trade contacts. According to trade sources, the 12 large paper wholesalers handle most of paper importations.

One of the largest job printers in Ecuador, and the only paper bag manufacturer, complains of being unable to obtain enough paper in the U.S., and that some types can be obtained in desired quantities only through speculators at exorbitant prices. It is felt that U.S. exporters should send sales representatives periodically to ascertain needs of their customers.

Production

Only a small amount of paperboard is produced in Ecuador. Manufacture is limited to one mill which produces binderboard and an inferior grade of boxboard, both products in good demand. Mill plans expansion to reach output of 25 tons monthly, an increase of 10 tons over current production. Although there is an abundance of raw material for a pulp industry, and bamboo has been under particular discussion, there is no pulp or paper industry in the country. The Societe France-Ecquateur has announced its interest in exploiting the forest resources, objective being establishment of a pulp and paper industry.

Consumption

Trend toward increased use of paper in packaging of foodstuffs is said to be noticeable, but use is still small. Most butter is wrapped in parchment paper. One lard manufacturer uses similar pack for his product, but the ordinary market in the interior region packages lard in the cheaper cabbage leaf. Wrapping paper replaces newspaper for packaging in all but the smallest shops. In better stores, paper bags are now in common use.

Greater consumption of newsprint is not apparent in more newspapers or in greatly increased circulation, but in larger editions of existing publications.

Commercial printing of books is reported as a minor industry, most books being issued by the various cultural agencies of the country and by the universities.

Job printing and related activities show the greatest expansions. Prohibition under the current Emergency Exchange Law on the importation of cut-to-order stationery, envelopes, accounting forms, notebooks, memorandum books and calling cards has greatly stimulated the industry and made it one of the most thriving in the country.

Export Competition

U.S. became the chief supplier of paper to Ecuador during World War II, and has retained this position in all but wrapping paper, mainly supplied by Sweden; wall paper by Canada and Great Britain; newsprint, by Canada; gummed paper, by Belgium. Canada, Sweden and Norway are now main competitors, with 1947 mports divided as follows: U.S., 36.0 percent; Canada, 35.0 percent; Sweden, 20.0 percent; Norway, 4.4 percent.

Venezuela

A current demand is reported for newsprint, kraft wrapping paper, and manifold paper. These papers are imported under the following customs classifications: newsprint (469 and 470), duty-free for publishing purposes; kraft wrapping (244-C), 0.40 bolivars per kilogram; and manifold (247), 1.20 bolivars per kilogram. There are no import restrictions on any type paper and there is no exchange control. Payment for imports is being made promptly, it is stated.

Costa Rica

Under revised regulations regarding foreign exchange control and new category classifications of Costa Rica, newsprint now falls in the preference category, whereas most other paper products are in the first category. Grades of paper classified in first category are writing, drawing, music, lithographic, and toilet paper; white printing paper (other than newsprint), glassine, paraffin, parchment, and wrapping paper; wallpaper, photographic paper, blueprint, cellophane, carbon, safety, and gummed paper; roll paper (for adding machines, etc.) and cigarette paper in rolls and reams.

Letters of credit may be opened on articles in the preference and first categories upon deposit of dollars with the Exchange Control Board. Even though letters of credit are not opened, authorization of dollar exchange may be expected within a few months on articles in these two categories.

Haiti

The following grades might offer a fair volume of sales for the U.S. exporter: chipboard, wallboard (pressboard), bristols, roofing paper, common wrapping, manila, newsprint, linen or parchment, plain writing or legal paper, boxed writing paper, and toilet paper. There are no import restrictions on paper, and dollar availability is reported as ample to provide for the country's requirements.

Items are dutiable at rates varving from 0.05 gourde (gourde equals $.20) per gross kilogram on newsprint to 1 gourde per net kilogram or 30 percent ad valorem, whichever is higher, on boxed stationery. Many commodities are dutiable either on the basis of a fixed tariff per unit or on an ad valorem basis. Customs officials are permitted to adopt the means of assessment which will yield the higher duty.

Indexes

Index of general business activity for the week ended February 26 eased to 148.2 from 148.8 in the preceding week, compared with 153.5 in the corresponding week of 1948. Index of paperboard production dropped to 165.3 from 175.7 in the preceding week, compared with 181.0 in the same week of 1948.

Comparative ratios of U.S. paper and paperboard production to mill capacity, as reported by AP&PA are:

	Feb. 26 1949	Feb. 19 1949	Feb. 28 1948	Mar. 1 1947	Mar. 2 1946
Paper**	91.7	93.7	102.1	108.5	101.8
Paperboard ..	80.0	86.0	101.0	102.0	98.0

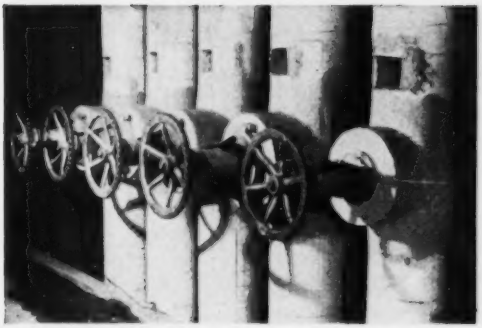
** Capacity in tons—181,813; 1948, 172,250.

Paperboard Production (Tons)

	Feb. 26 1949	Feb. 19 1949	Feb. 28 1948	Month of Feb.
Production	164,620	175,628	180,628	698,017
New Orders.	135,542	152,291	169,597	663,249
Unfilled Orders ...	267,685	295,474	428,510	267,685

Percent of Activity. Current 80%; Year, 85%.

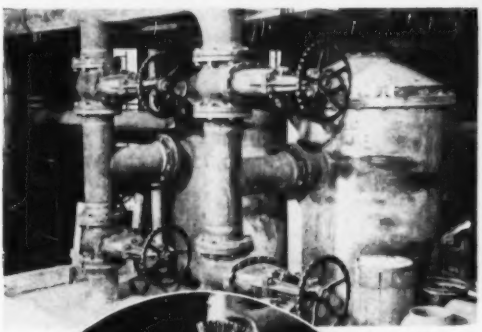
Walworth Iron Body Bronze Mounted Gate Valves (No. 726F) on steam line to paper machine.



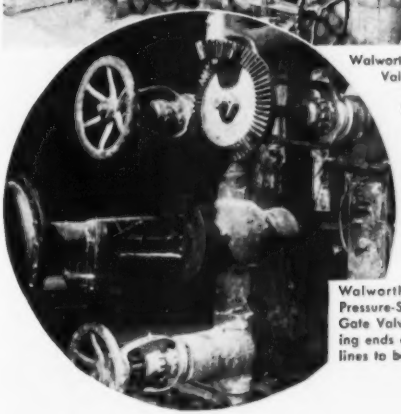
Walworth Series 900 Pressure-Seal Cast Steel Gate Valves with welding ends on main steam lines.

Walworth Special Alloy Pulp Mill Gate Valves (No. 725FS) and Check Valves (No. 928FS) on liquor lines.

Walworth Extra Heavy Steeliron Gate Valves (No. 786F) and Globe Valves (No. 955F) on pressure reducing lines.



Walworth All Iron Gate Valves (No. 727F) in weak black liquor service.



Walworth Series 900 Pressure-Seal Cast Steel Gate Valves with welding ends on feed water lines to boiler.

Valves for Pulp and Paper Mill Service

Valves play an important part in the efficient operation of any pulp or paper mill. For new construction, or for maintenance, pulp and paper mill engineers are choosing the right valve for each specific service from Walworth's complete line.

Walworth manufactures valves and pipe fittings of steel, steeliron, iron, bronze, and special alloys. Illustrated are Walworth valves of latest design, installed in a variety of services in a modern pulp and paper mill.

For further information and details of Walworth's complete line of valves and fittings, see your local Walworth distributor, or write for Catalog 47.

WALWORTH

Pulp and Paper Mill Division

60 EAST 42nd ST., NEW YORK 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

Imports

Week Ending March 5

NEW YORK

Newsprint

Malmar Paper Co., Netherlands Victory, Trieste, 258 rolls

Madden Reeve Angel & Co., Inc., Mormacoak, Kotka, 1029 rolls, 63 pkgs.

Drawing Paper

Natural Nydegger, Noordam, Rotterdam, 1 cs.

Decalcomanias

E. H. Cort Inc., American Ranger, Bremen, 1 cs.

Castleton China Inc., Media, Liverpool, 3 cs.

Filter Paper

H. Reeve Angel & Co., Inc., American Ranger, London, 13 cs.

Drawing Paper

H. Reeve Angel & Co., Inc., American Ranger, London, 1 cs.

Tracing Paper

Keuffel & Esser Co., American Builder, Manchester, 6 cs. (bleached cotton).

Writing Paper

Gimbel Bros., American Harvester, Havre, 2 cs.

Wallpaper

R. F. Downing & Co., American Harvester, Havre, 18 cs.

C. A. Haynes & Co., Media, Liverpool, 24 cs.

C. A. Haynes & Co., American Builder, Liverpool, 160 ctns.

Cardboard

Intramar Shipping Co., American Attorney, Antwerp, 90 cs.

Surface Coated Paper

Gevaert Co. of America, American Attorney, Antwerp, 5 cs.

Serviettes

(———), Media, Liverpool, 8 cs.

Brundage Merchandise Co., Noordam, Rotterdam, 5 bls. (crepe paper).

Wood Veneer Paper

Stevens Nelson Paper Corp., Resolute, Yokohama, 2 cs.

Carbon Paper

Carbon Web Corp., Mormacoak, Kotka, 1 cs.

Gummed Paper

B. F. Drakenfeld & Co., Media, Liverpool, 41 cs.

John Waldron Corp., American Builder, Liverpool, 1 cs. (simplex uncoated).

B. F. Drakenfeld & Co., American Builder, Liverpool, 27 cs.

Tissue Paper

B. F. Drakenfeld & Co., Media, Liverpool, 10 cs. (pottery).

B. F. Drakenfeld & Co., Media, Liverpool, 3 cs. (gauze stereotyping).

B. F. Drakenfeld & Co., Media, Liverpool, 15 cs.

Rags, Baggings, Etc.

Castle & Overton, Inc., Birkaland, Genoa, 23 bls. old gummy bagging, 70 bls. gunny bagging.

H. Adlerstein, Birkaland, Genoa, 57 bls. jute rags.

D. Benedetto, Agwiking, Havana, 89 bls. rags.

Midwest Waste Material Co., Vulcania, Genoa, 87 bls. jute rags.

C. Comiter, Dona Nati, Shanghai, 500 bls. cotton waste.

Riverside Mills, Dona Nati, Shanghai, 300 bls. cotton waste.

Castle & Overton, Inc., Netherlands Victory, Trieste, 201 bls. jute bagging.

Chase National Bank, Exeter, Genoa, 188 bls. old waste bagging.

A. W. Fenton Inc., Jessie Maersk, Antwerp, 126 bls. scrap bagging.

Midwest Waste Material Co., Jessie Maersk, Antwerp, 477 bls. scrap bagging, 33 bls. jute thread, 81 bls. jute waste, 142 bls. card waste.

National City Bank, Ida Bakke, Rotterdam, 52 bls. old jute bagging.

Chemical Bank Trust Co., Ida Bakke, Antwerp, 21 bls. old blue linens.

McKay & Co., Ida Bakke, Antwerp, 84 bls. cotton waste.

1st National Bank of Boston, Foldal, Murmansk, 3402 bls. cotton linters, 817 bls. cotton waste.

1st National Bank, Chicago, Foldal, Murmansk, 6237 bls. cotton linters, 134 bls. cotton waste.

H. Adlerstein, Hoegh Silverlight, Genoa, 128 bls. old jute rags.

National City Bank, Khedive Ismail, Alexandria, 200 bls. bagging, 71 bls. rags.

Chemical Bank Trust Co., Khedive Ismail, Alexandria, 107 bls. scrap bagging.

New England Waste Co., Clan Mackinnon, Cochin, 702 cotton waste.

Trade National Bank, Clan Mackinnon, Cochin, 100 bls. old jute rags.

E. J. Keller Co., Inc., Resolute, Shanghai, 128 bls. paperstock.

China Trade & Industrial Service, Resolute, Shanghai, 200 bls. cotton waste.

New England Waste Co., Alf. Lindeberg, Santos, 339 bls. old jute bagging waste.

Irving Trust Co., Thyra S. Alexandria, 18 bls. rags.

National City Bank, Thyra S., Alexandria, 152 bls. rags.

New England Waste Co., Steel Voyager, Karachi, 100 bls. hessian rags, 1744 bls. cotton waste.

(———), Steel Voyager, Karachi, 50 bls. hessian rag waste, 75 bls. cotton waste.

M. O. Schimmel, Steel Voyager, Karachi, 100 bls. jute rags.

C. Comiter, Steel Voyager, Karachi, 65 bls. old jute rags.

Brandwein Mazur Co., Steel Voyager, Karachi, 400 bls. cotton waste.

(———), Mahseer, Calcutta, 240 Bls. paperstock.

New England Waste Co., Gertrude Maersk, Shanghai, 100 bls. cotton waste.

(———), Agwistar, Havana, 200 bls. gluestock.

Amicale Wool Service Co., Agwistar, Havana, 22 bls. wool rags.

(———), American Builder, Manchester, 90 bls. new cotton gabardine cuttings, 40 bls. gunnies.

Irving Trust Co., American Builder, Manchester, 98 bls. jute waste.

1st National Bank Chicago, Rena, Murmansk, 10980 bls. cotton linters, 564 bls. cotton waste.

1st National Bank of Boston, Rena, Murmansk, 2496 bls. cotton linters, 2331 bls. cotton waste.

Casein

Bank of New South Wales, Pioneer Gem, Melbourne, 1000 bags (rennet).

Gluestock

John Gorvers, Santa Clara, Barranquilla, 100 rolls.

NEWARK

Herkitis Goodwin & Co., Milos, Norrsundet, 450 bls. dry sulphate pulp.

Cellulose Sales Co., Milos, Sundsvalt, 4200 bls. dry sulphite pulp, 4014 bls. kraft sulphate pulp.

Bulkley Dunton Pulp Co., Milos, Stugsund-Sandarne, 500 bls. prime bleached sulphate pulp.

Cellulose Sales Co., Milos, Stugsund-Sandarne, 1070 bls. air sulphate pulp, 2060 bls. air sulphite pulp.

Engel Horton & Co., Inc., Milos, Gefle, 2268 bls. woodpulp.

Bulkley Dunton Pulp Co., Milos, Gefle, 2286 bls. dry sulphite pulp.

Pagel Horton & Co., Inc., Rydboholm, Husum, 2771 bls. dry bleached sulphite pulp.

Price & Pierce, Ltd., Rydboholm, Husum, 600 bls. dry sulphite pulp.

Bulkley Dunton Pulp Co. Rydboholm, Gefle, 1016 bls. dry sulphite pulp.

BOSTON

E. J. Keller Co., Inc., Exanthia, Algiers, 200 bls. cotton rags.

(———), Nyhaug, Naples, 17 bls. old jute rags.

Pagel Horton & Co., Inc., Rydboholm, Husum, 153 bls. dry bleached sulphite pulp.

PHILADELPHIA

Mynol Chemical Co., American Builder, Liverpool, 5 crates carbon paper.

(———), Netherlands Victory, Venice, 107 bls. old bagging.

Darmstadt Scott & Courtney, Jessie Maersk, Rotterdam, 189 bls. old scrap bagging.

(———), Thyra S., Alexandria, 146 bls. rags.

Jay Madden Corp., Mormacoak, Helsingfors, 535 rolls wrapping paper.

Jay Madden Corp., Mormacoak, Kotka, 693 rolls newsprint.

G. Posner, Gertrude Maersk, Hong Kong, 10 cs. pith paper.

San-Nap-Pak Manufacturing Co., Rydboholm, Gothenburg, 1250 bls. sulphite pulp.

Pagel Horton & Co., Inc., Rydboholm, Husum, 152 bls. dry bleached sulphite pulp.

Perkins Goodwin & Co., Rydboholm, Wallvik, 1500 bls. dry sulphite pulp.

Gottesman & Co., Inc., Rydboholm, Gefle, 500 bls. prime semi-bleached sulphate pulp.

BALTIMORE

Madden Reeve Angel & Co., Inc., Mormacoak, Kotka, 1015 rolls newsprint.

National City Bank, Blydendyk, Rotterdam, 216 rolls newsprint.

Price & Pierce, Ltd., Rydboholm, Wallvik, 1500 bls. dry sulphite pulp.

Pulkley Dunton Pulp Co., Rydboholm, Gefle, 150 bls. prime semi-bleached sulphate pulp.

Washington Daily News, Rydboholm, Hallstavik, 340 rolls newsprint.

NEWPORT

The Observer Co. (Charlote, N. C.), Rydboholm, Hallstavik, 572 rolls newsprint.

NORFOLK

Security National Bank, (Raleigh, N. C.), Blydendyk, 124 rolls newsprint.

BPTA Meet March 16

BOSTON — The Sixty-third Anniversary Banquet and Annual Meeting of the Boston Paper Trade Ass'n. will be held at Hotel Somerset, March 16. Speakers are Hon. John E. Hurley, treasurer, The Commonwealth of Massachusetts; and Dr. Hugo Kosloff, "Russian surgeon, soldier and statesman," whose subject will be "America and Russia as I See Them." Reception at six o'clock. Dress formal.

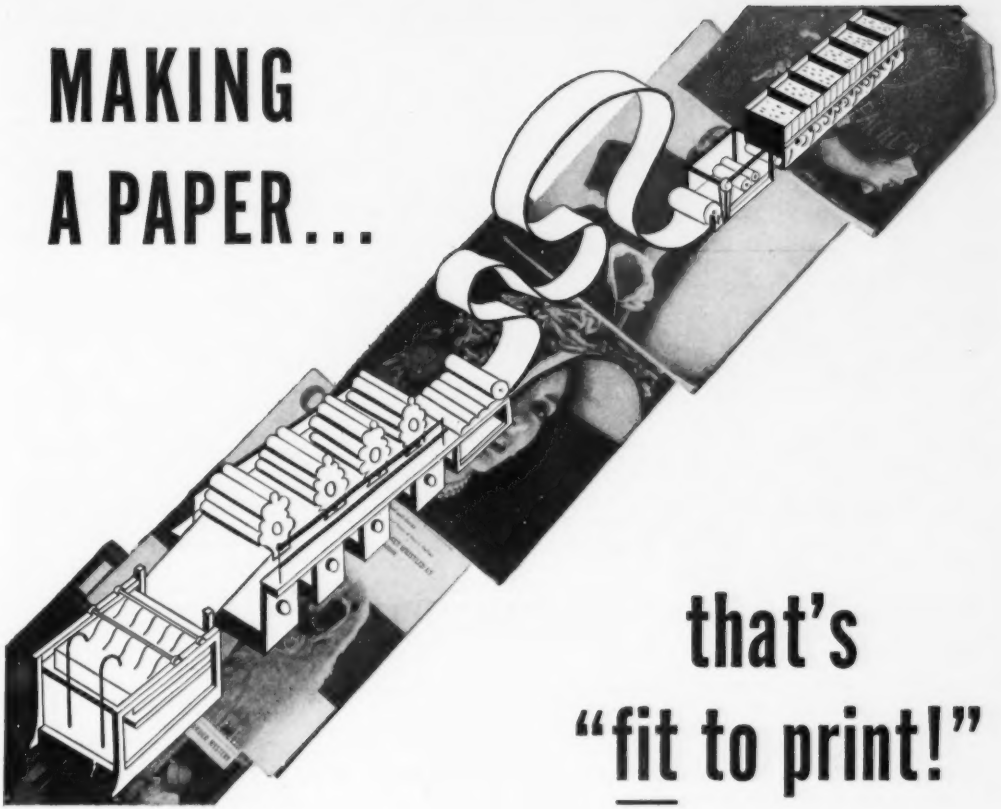
The membership committee has approved the following applications for membership:

Regular—Benjamin F. Perkins, Jr., American Tissue Mills. Limited — Douglas B. Cowie, Lewis-Brownville Sales, Inc.; George H. Hackett, Monadnock Paper Mills, Inc.; John F. McGowan, Pratt Paper Co.; Edwin F. Miles, Missisquoi Corp.; and George J. Smart, Hammermill Paper Co.

Ceylon Import Ruling

OTTAWA — Applications for the importation into Ceylon of paper from any source may now be submitted for consideration and the application should be accompanied by a firm order, according to a report of the Foreign Trade Service, Department of Trade and Commerce, Canadian Government.

MAKING A PAPER...



that's "fit to print!"

Like the star editor in the publication office, NOPCO KF* —*star "bubble-buster"*—helps the paper manufacturer to make a paper that's fit to print.

NOPCO KF improves sheet formation even at increased machine speeds by eliminating the twin foes of good paper production—excess foam and faulty fiber dispersion. Entrained air—common cause of thin spots—is dissipated as if stock were being handled at slow speeds—because NOPCO KF keeps working on the wire.

***NOPCO KF** provides these 9 advantages.* (1) *one-minute* preparation of KF emulsion . . . (2) *two-minute* dispersion of foam at head-box . . . (3) *five-minute* elimination of bubbles from wire . . . (4) at least 75% reduction of thin spots . . . (5) production of more paper with fewer clean-ups . . . (6) reduced breaks . . . (7) improved surface characteristics . . . (8) conservation of valuable paper making material . . . (9) greatly increased water repellency.

See what this chemical substance—expressly formulated to aid formation and make paper fit to print—can do in your mill. Order enough for a trial run now.

NOPCO CHEMICAL COMPANY, Harrison, N. J.
Formerly National Oil Products Co.
Branches: BOSTON • CHICAGO • CEDARTOWN, GA. • RICHMOND, CALIF.

NOPCO KF

NOPCO
EVOLVED THRU RESEARCH

SUPER "BUBBLE-BUSTER"

An affiliate of the American Pulp and Paper Mill Superintendents Association

*Reg. U. S. Pat. Off.

Prices

Quotations indicate trends in an open market. At the moment they can be of little more value. While some volume business still is done under contract at the figures shown, fluctuations are too varied and frequent to permit prices to be interpreted as representing a wholly stabilized market.

NEW YORK

Paper

Delivered New York

STANDARD NEWS, per ton—

Rolls, contract	$100.00/	—
Sheets	115.00/	—

F.o.b. mill, varying freight allowances, Zone 1.

KRAFT—per cwt., 40# base wgt.

No. 1 Wrapping	7.75/	8.00
Standard Wrapping Rolls	7.00/	—
Standard Wrapping Sheets	7.50/	—
Standard Bag	6.50/	—
Multiwall Bag, 40# and heavier, 24x36 (500 sheets)		
Southern	7.50/	7.75
Northern	8.85/	10.15

TISSUES—Per Ream 24x36 (480) 10/11 lbs.

Wh. No. 1 Frd.	$1.84/	$2.00
Wh. No. 1 M. G.	1.94/	2.00
Wh. No. 1½	1.65/	—
Wh. No. 2	1.45/	1.55
Kraft Anti-Tar	1.65/	—
Kraft Unbl.	1.85/	—
Shred. Wh. No. 1 per lb.	.12¾/	.18

TOILET—Per Case of 100 rolls—1 M Sheets.

Unbleached 4½x4½	$7.20/	—
Unbleached 4½x5	8.85/	—
Bleached 4½x4½	8.00/	—
Bleached 4½x5	8.45/	8.80

Per Case of 50 rolls—1500 sheets

Unbleached 4½x4½	$5.70/	—

Per Case of 50 rolls—2000 sheets

Unbleached 4½x4½	$6.95/	—
Bleached 4½x4½	7.70/	—

PAPER TOWELS—Per Case of 3750—Zone 1.

Wh. Jr. M'tif'd 9¼x9½	$5.45
Br. Sr. M'tif'd 10x12	3.80
Br. Jr. M'tif'd 9½x9¾	3.30
Br. Jr. Sgl. fold 10x10¾	3.35

MANILA, per cwt.

No. 1 Jute Tag, sheets*	$15.05/	—
Reg. Jute M.F. Manila, sheets*	13.50/	15.50
No. 1 Manila Wrapping	8.75/	10.50
Printing Manila	10.00/	11.00

* Less usual allowance for rolls.

BOARDS, per ton—

Filled News	$80.00/	$82.50
Plain Chip	80.00/	—
Bldhd. Mla. L-d. Chip*	102.50/	105.00
White Pat. coated*	120.00/	
Kraft Liners 42 lb.	105.00/	
Kraft Corr. .009	110.00/	

Binders Boards	120.00/126.00

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1:

RAG CONTENT BONDS AND LEDGERS—

White, 20 lb.

BONDS, per cwt.

	Carton	4 Cart.	Ton
100% Rag Ex. No. 1	$57.00	$51.40	$49.30
100% Rag	48.25	44.55	42.70
75% Rag	39.50	35.90	34.50
50% Rag	31.50	28.75	27.60
25% Rag	28.00	25.50	24.50

LEDGERS, per cwt.

100% Rag Ex. No. 1	$59.00	$54.55	$52.30
100% Rag	49.50	45.80	43.90
75% Rag	38.75	35.80	34.30
50% Rag	33.00	30.05	28.85
25% Rag	29.50	26.80	25.70

SULPHITE BONDS AND LEDGERS—

White, 20 lb.

BONDS, per cwt.

No. 1	$21.25	$19.25	$18.50
No. 2	20.25	18.30	17.55
No. 4	19.25	17.55	16.85

LEDGERS, per cwt.—

No. 1	$21.75	$19.65	$18.85
No. 2	20.75	18.75	18.05
No. 4	20.00	18.10	17.35

WHITE BOOK, per cwt.—

	Case	Ton
Conv. Coated		
No. 1 Glossy	$20.90	$20.15
No. 2 Glossy	19.65	18.90
No. 3 Glossy	18.90	18.25
Machine Coated		
No. 1	17.15	16.40
No. 2	14.90	14.15
Uncoated		
No. 1 Antique (Watermarked)	16.40	15.80
Offset	15.15 to 17.15	14.60 to 16.40
A Grade E. F.	15.40	14.85
A Grade S. C.	15.90	15.35
B Grade E. F.	15.15	14.55
B Grade S. C.	15.65	14.95

World Wood Pulp Markets at a Glance

First Quarter Contract Prices, Per Short Air-Dry Ton

	Delivered, with varying freight allowances		On dock Atlantic Ports		
	U. S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$80.00/ —	$80.00/ —			
Siderums Pulping News		80.00/ 90.00			
Soda, Bleached	130.00/135.00	130.00/ —			
Sulphate, Bleached	*132.50/145.00	147.50/150.00	*150.00/ —		
Sulphate, Unbl'd North'n	115.00/125.00	115.00/125.00	*127.50/ —	127.50/ —	
Sulphate, Unbl'd South'n	95.00/ —				
Sulphite, Bldhd. (S'ftw'd)	126.00/135.00	135.00/ —	*140.00/165.00	165.00/ —	140.00/165.00
Sulphite, Bldhd. (H'dw'd)	125.00/145.00				
Sulphite, Unbleached	118.00/ —	125.00/ —	*135.00/140.00	140.00/143.00	
Sulphite, Unbl'd (Glassine) (No freight allowed)		118.00/ —			

* Second Quarter: U. S. Bldhd. Sulphate $132.50/136.00; Swed. $137.50/140.00; Swed. Unbldhd. Sulphate $112.50/—— ; Swed. Bldhd. Sulphite $132.50/140.00; Swed. Unbldhd. Sulphite $120.00/122.50. ‡ Southern.

Waste Paper Market

Base Prices to Mills for Average Packings

F.O.B. Shipping Point (Per Ton)

	New York Feb. 25	Philadelphia Mar. 7	Boston Mar. 5	Chicago Feb. 1
No. 1 Hd. Wht. Env. Cuts	$95.00/100.00	$90.00/100.00	$90.00/105.00	$90.00/100.00
No. 1 Hd. Wht. Shvs., unr'l'd	80.00/ 85.00	65.00/ 75.00	80.00/——	80.00/——
Super Soft Whit. Shvs.	80.00/ 85.00	65.00/ 70.00	80.00/110.00	75.00/——
No. 1 Soft Wht. Shvs.	60.00/ 65.00	45.00/ 50.00	70.00/ 80.00	55.00/——
No. 1 Fly Leaf Shvs.	40.00/——	18.00/ 22.00	35.00/ 40.00	35.00/——
No. 1 Gdwd. Fly Leaf Shvs.	20.00/ 30.00	14.00/ 16.00	25.00/——	45.00/——
No. 1 Heavy Books & Mag.	17.00/ 19.00	14.00/ 18.00	22.00/ 23.00	23.50/——
Mixed Books	9.00/ 11.00	8.00/ 10.00	12.00/——	9.00/——
No. 1 Wht. Ledger	35.00/ 40.00	35.00/ 40.00	45.00/ 50.00	
Colored Ledger	30.00/ 32.50	25.00/ 30.00	37.50/——	30.00/ 31.00
Manila Tab. Cards	55.00/ 60.00	45.00/ 50.00	65.00/ 75.00	65.00/——
New Manila Env. Cuts	65.00/ 75.00	60.00/ 65.00	60.00/ 70.00	70.00/——
Extra Manilas	20.00/ 25.00	20.00/ 25.00	30.00/ 35.00	30.00/ 35.00
Mxd. Kraft, Bag Cuts	45.00/ 55.00	45.00/ 50.00	70.00/——	60.00/——
Kraft Envelope Cuts	65.00/ 70.00	65.00/ 70.00	70.00/ 75.00	65.00/——
Trpl. Std. No. 1 Brn. Sft. Kraft	35.00/ 40.00	30.00/ 40.00	40.00/ 45.00	40.00/——
New Kraft Corr. Cuts	30.00/ 35.00	25.00/ 30.00	45.00/——	55.00/——
No. 1 Asstd. Old Kraft	30.00/ 35.00	25.00/ 30.00	25.00/——	20.00/——
Used Kraft Bags	30.00/ 35.00	14.00/ 18.00	30.00/——	35.00/——
New Jute Corr. Cuts	18.00/——	18.00/ 20.00	16.00/——	17.00/ 18.00
Old Corrugated	14.00/ 15.00	12.00/ 14.00	11.00/ 14.00	14.00/——
No. 1 News	12.00/ 14.00	7.00/ 10.00	11.00/ 12.00	—— / 15.00
No. 1 Mixed Paper	4.00/ 5.00	4.00/ 6.00	—— / 7.00	7.00/——
Box Board Cuts	6.00/ 7.00	4.00/ 5.00	10.00/——	10.00/——
White Blank News	60.00/ 65.00	45.00/ 55.00	—— / 60.00	45.00/——
Overissue News	12.00/ 14.00	12.00/ 14.00	11.00/ 12.00	18.00/——
Sulphite Mill Wrappers	12.00/ 14.00	7.00/ 9.00	15.00/——	12.00/——

Twines

All Prices Nominal, F.o.b. Mill

(Soft Fiber)

Coarse Polished—India	.35½/ .36½
Fine Polished India	.41½/ .45
Unpolished—Paper Makers	.32¼/ .34½
Tube Rope	.33¾/ .35½
Wrapping	.36 / .38¾
Cotton	.58 / .60
Polished Cotton	.55 / —
(Hard Fiber)	
Mex. Sisal	.21 / .27
Manila (Reprocessed)	.31 / .33
(American Hemp)	
Polished Hemp	.46½/ .48
Unpolished	.35 / .37¼

Rag Market

New Domestic Cotton Cuttings

(Prices to Dealers, F.o.b. Ship. Pt.)

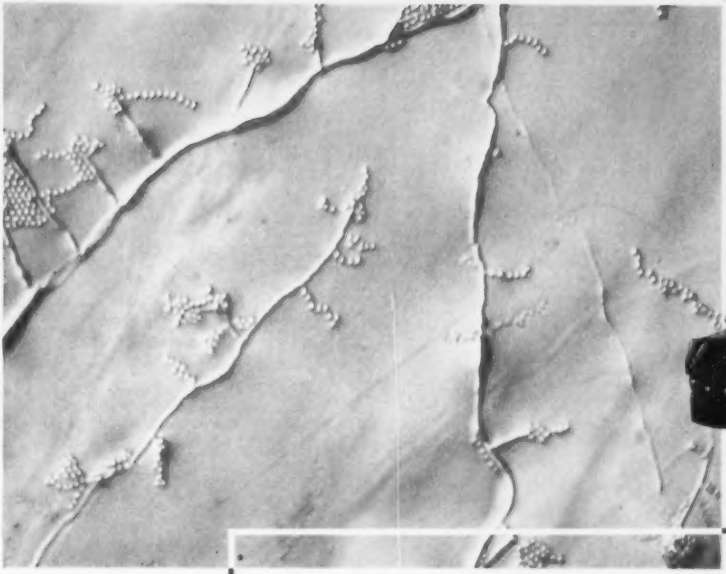
White Shirt	$10.00/	$10.50
Unbleached Muslin	10.00/	10.50
Light Silesias	7.00/	7.50
White Back Blue Overalls	5.75/	6.00
Blue Overalls	5.25/	5.75
Fancy Shirt	4.50/	5.00
Percales	5.50/	6.00
Light Prints	5.50/	6.00
No. 1 Washables	3.00/	3.25
Bleachable Khaki	5.00/	5.50
Unbleachable Khaki	4.50/	5.00
Cottonades	4.25/	4.75
Lt. Flannelettes	7.00/	7.50
Men's Corduroy	3.50/	4.00
Women's Corduroy	3.00/	3.50

Old Domestic Cotton Rags

(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.	
No. 1 Whites, Repacked	$4.50/	$5.00
No. 1 Whites, Miscellaneous	3.50/	4.00
No. 2 Whites, Repacked	2.75/	3.00

(Continued on page 36)



Left — Microphoto of Monilia (White), one of the slime-forming micro-organisms frequently found in paper mills and controlled by the Nalco System. Photos in Nalco Laboratories.

FORMULA FOR SUCCESSFUL SLIME CONTROL

SLIME control, like paper making itself, requires constant and careful attention to details. Here is a formula for successful slime control which will cut to a minimum, spots and specks, breaks, cleaning, and other costly problems due to slime:

- Identify slime-forming organisms to be controlled.
  A NALCO SERVICE
- Determine the best types of treatment to be used.
  A NALCO SERVICE
- Locate, by detailed survey, the proper points of application.
  A NALCO SERVICE
- Provide consistent supervision to check application and effectiveness of treatment.
  A NALCO SERVICE
- Maintenance of high standards of sanitation throughout the mill. (Even the best of treating and scientific control can be seriously hampered by unsanitary conditions.)

Nalco Field Representatives and the modern, scientific facilities of the Nalco Laboratories are at your service to put this formula for successful slime control into practical operation in your mill. Write for details today.

NATIONAL ALUMINATE CORPORATION
6221 W. 66th Place • Chicago 38, Illinois

Canadian inquiries should be addressed to Alchem, Limited Burlington, Ontario

THE Nalco SYSTEM . . . **Serving the Paper Industry through Practical Applied Science**

Prices

CONTINUED FROM PAGE 34

No. 2 Whites, Miscellaneous	2.00/ 2.25
Blue Overalls	3.00/ 3.25
Thirds and Blues, Repacked	2.00/ 2.25
No. 1 Roofing Rags	1.40/ 1.50
No. 2 Roofing Rags	1.25/ 1.35
No. 3 Jute Bagging	1.15/ 1.25
No. 4 Brussels & hrd. Bck'd crpts.	1.25/ 1.35
No. 5A Roofing Rags	1.25/ 1.35

New Foreign Cotton Cuttings

(Prices to Dealer, F.o.b. Dock, N. Y.)

	Per 100 lbs.
New Dark Cuttings	
New Mixed Cuttings	
Light Silesias	prices
Light Flannelettes	
New White Cuttings	are
New Unbleached Cuttings	
Fancy Shirt Cuttings	nominal
Light Prints	
Bleachable Khaki, No. 1	
Unbl. Khaki, No. 1	

Old Foreign Rags

(Prices to Dealer, F.o.b. Dock, N. Y.)

	Per 100 lbs.
No. 1 White Cottons	
No. 2 White Cottons	
No. 3 White Cottons	
No. 4 White Cottons	prices
Extra Light Prints	
Old Light Prints	
Med. Light Prints	are
Dutch Blue Cottons	
Checks and Blues	
Linsey Garments	nominal
Dark Cottons, European	
Dark Cottons, Egyptian	
Old Shopperies	
New Shopperies	

Bagging

(Prices to Dealers, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny, No. 1	$8.00/ $8.50
Domestic Gunny, No. 1	8.00/ 8.50
Heavy Wool Tares	7.00/ 7.50
No. 1 Scrap Bagging	5.75/ 6.00
Roofing Bagging	.80/ .95
Foreign Manila Rope	5.50/ 6.00
Domestic Manila Rope	5.75/ 6.00
Jute Strings	6.00/ 6.25
No. 1 Sisal Strings	5.00/ 5.25
Mixed Strings	1.30/ 1.50

PHILADELPHIA

Domestic Rags (new)

(F.o.b. Eastern Shipping Point)

White Shirt	.10½/ .11
Light Silesias	.07½/ .08
Black Silesias, soft	.05½/ .06
Unbleached Muslin	.10½/ .11¾
Washable Prints	.06½/ .07
Washable No. 1	.05 / .05½
Blue Overall	.07½/ .08
Washable Shredding	.02¾/ .03¼
Fancy Percales	.06¾/ .07¼
Unbleachable Khaki	.05½/ .06½
Bleachable Khaki	.06¼/ .06¾
Men's Corduroy	.05½/ .06
Ladies' Corduroy	.05 / .05½
Cottonades	.05½/ .06

Domestic Rags (old)

(F.o.b. Eastern Shipping Point)

Mixed White	3.50 / —
Thirds and Blues Repacked	2.00 / —
No. 1 Roofing Stock	1.20 / —
No. 2 Roofing Stock	1.10 / —

Bagging

(F.o.b. Eastern Shipping Point)

Roofing Bagging	1.35 / 1.40
Old Manila Rope	— / 5.50
Foreign Gunny No. 1	nominal
Domestic Gunny No. 1	.07¼/ .07¾
Sisal Strings No. 1	.04½/ .05
Sisal Strings No. 2	.03½/ .04
Sisal Jute	.02¼/ .03
No. 1 Scrap	.06½/ .07
No. 2 Scrap	.03 / .03½

BOSTON

Bagging

(F.o.b. Boston)

	(Per 100 lbs.)
Foreign Gunny	9.25 / 9.50
Domestic Gunny	9.00 / 9.50
Domestic No. 1 Old Rope	6.00 / 6.50
Foreign No. 1 Old Rope	5.75 / 6.00
Mixed Strings	1.45 / —
Transmission Rope—Domestic	3.00 / 3.50
Jute Carpet Threads	— / 4.00
Bleachery Burlap	— / 9.00
Scrap Burlap—	
Foreign	6.75 / 7.00
Domestic	8.25 / 8.50
South America	8.25 / 8.50
Austr. Wool Pouches	8.50 / —
New Zealand Wool Pouches	8.00 / —
New Burlap Cuttings	8.50 / —
Heavy Baling Bagging	8.00 / 8.50
Paper Mill Bagging	— / 7.25
No. 1 Roofing Bagging	— / 1.40

Domestic Rags (New)

(F.o.b. Boston)

	(Per 100 lbs.)
New Light Prints	nominal
Fancy Percales	— / 6.50
White No. 1 Shirt	10.00 /10.75
Light Flannelettes	7.00 / 7.50
Canton Flannels, Bleached	9.00 / 9.25
Underwear Cutters, Bleached	10.00 /10.25
Underwear Cutters, Unbleached	10.00 /10.25
Blue Overalls	— / 6.00
Soft Unbleached	10.00 /10.75
Blue Cheviots	7.00 / 7.25
Fancy Shirt	5.00 / 5.25
Washable	5.00 / 5.25
Khaki Cuttings	5.00 / 5.25
Men's Corduroy	4.50 / —
Khaki Canvas	— / 5.50
B. V. D. Cuttings	10.00 /10.25

Domestic Rags (Old)

(F.o.b. Boston)

	Per 100 lbs.
No. 1 Whites, Repacked	$4.00 / —
No. 1 Whites, Miscellaneous	3.00 / 3.75
Twos and Blues, Repacked	2.25 / 2.50
Old Blue Overalls	3.00 / 3.25
No. 1 Roofing Stock	— / 1.45
No. 2 Roofing Stock	— / 1.35
No. 3 Roofing Stock	— / .80
No. 4 Roofing Stock	— / .80
No. 5, Quality A	— / 1.20
Old Manila Rope	6.00 / —

Markets

Blanc Fixe

Supply ample. Prices firm. Currently quoted at $85.00 in bags, car lots, at works, 6 cents per pound, l.c.l., deld. By-product supply somewhat restricted. Quoted at $77.50 per ton, car lots, at works, 6 cents per pound, l.c.l., deld.

Bleaching Powder

Steady improvement in supply. Demand and prices steady. Prices range from $4.25 to $4.75 per 100 pound drums, l.c.l., works.

Casein

Demand light. Govt. purchases disappointing to trade. Argentine market weakened by shortage of foreign exchange. Current prices on processed acid precipitated casein at 23 to 28 cents per pound for domestic grades and 22½ to 25 cents for imported grades, f.o.b. shipping point.

Caustic Soda

Demand eased. Supply adequate for prompt shipment. Prices firm. Solid caustic is reported at $3.05 per cwt. flaked and ground is quoted at $3.45 per cwt., in 400 pound drums, $3.95 per cwt. in 100 pound drums—car lots at works; liquid 50 percent in tank cars at $2.40 per cwt.; liquid 73 percent in tank cars at $2.50 per cwt., at works.

China Clay

Demand easier, supply of domestic and imported ample. Prices firm. Domestic filler quoted at $10 to $12.50 per ton, car lots, f.o.b. mines. Coating clay is $15 to $25. Imported clay quotation, short tons, $16 to $35, export warehouse.

Chlorine

Some easing of demand and improvement in production makes supply condition favorable. Prices firm. Currently quoted at $2.40 per cwt. in single unit tank cars; at $2.70 to $3.90 per cwt. in multi-tank cars, f.o.b., works.

Rosin

Demand fair. Market undertone firmed by hope in Govt. loan. Gum rosin in drums per 100 pounds net in car lots, f.o.b., Savannah; B, $6.50; G, H, I, K, $6.54; Wood rosin per 100 pounds net, car lots, f.o.b. Savannah; B, $4.50; FF, $6.50.

Rosin Size

Supply good. Demand steady. Seventy percent gum and pale wood grades, tank cars, $5.57 to $5.67, f.o.b. southern shipping point.

Salt Cake

Easing of demand and steady production brings ample supply condition. Prices steady. Domestic quoted at $27.00, f.o.b. shipping point, freight allowed to destination.

Soda Ash

Supply ample. Demand reduced by glass industry cutbacks. Prices firm. Current prices, car lots per 100 pounds; in bulk, $1.15; in paper bags, $1.40; and in barrels, $1.90.

Sodium Bicarbonate

Supply ample. Demand good. Prices firm. Reported at $1.95 per cwt. paper bags, carload lots.

Starch, Corn

Demand fair. Supply good. Prices firm. Pearl grade quoted at $4.67 per 100 pounds; powdered starch at $4.78 per 100 pounds; car lots, f.o.b. Chicago.

Starch, Potato

Brisk industrial and Govt. demand and ample supplies make Maine market uncertain. Idaho supply tight; price firm. High grade quoted at $4.50 cwt. f.o.b. Idaho; $4.75/$5.00 f.o.b. Maine; Pearl grade, $4.50/$4.75 cwt. f.o.b. Maine.

Sulphate of Alumina

Supply good. Demand steady. Prices firm. The commercial grades are quoted from $1.50 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is $2.50 per 100 pounds in bags, car lots, at works.

Sulphur

Demand sustained at good level. Supply good. Prices firm. Annual contracts are quoted at $18 per long ton, f.o.b. mines; $19.50, f.o.b. vessels, Gulf ports. Export price f.o.b. Gulf ports is $22.00 per long ton.

Talc

Prices steady. Demand continues ahead of supply. Improvement due this year. Domestic grades are currently quoted at $23 per ton in paper sacks, f.o.b. mills; Canadian at $35 and up per ton. All prices in car lots.

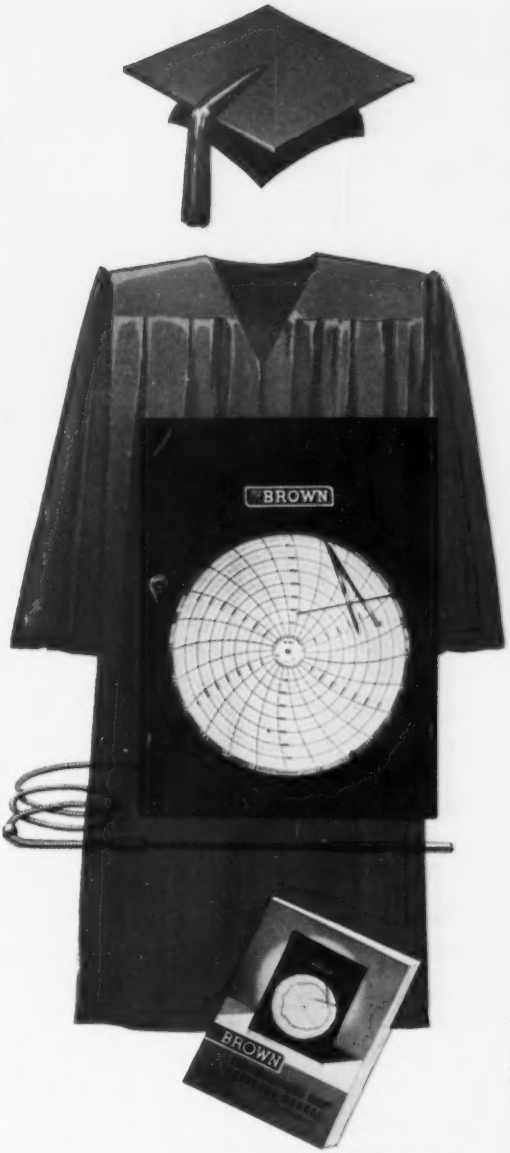
Tapioca Flour

Supplies tighter on all grades. Demand fair. Prices steady. Superior high range from $10.25/$11.50 cwt.; high grades $9.25 cwt., on dock Atlantic and Gulf ports; medium grades range from $6.00/$7.50 cwt. on dock, N. Y. Coarse pearl grades, $5.00/$5.50 cwt. on dock N. Y.

Titanium Dioxide

Supply reported now in balance with eased demand. Prices firm. Anastase 19½c pound carload lots, 20c l.c.l., rutile, 21½c pound carload lots, 22½c l.c.l.; 50-pound bags, f.o.b. plant, actual freight allowed.

THE THERMOMETER *with Degrees* from the School of Practical Experience



ACTUAL experience, in thousands of plants and operations, has proven that the Brown Thermometer can be relied upon for continuous and satisfactory service. Accurate temperature measurement and control, permanent record, greater power, speedy response . . . these are the popular features which have helped the Brown Thermometer remain first choice with practical production men year after year!

Investigate Brown Thermometers . . . indicating, recording, controlling . . . for *your* temperature problems. Control may be electric or pneumatic . . . in all forms. The bulb may be located at any distance up to 200 feet from the instrument.

It will pay *you* to specify Brown Thermometers . . . proved by practical experience . . . in your plant.

MINNEAPOLIS-HONEYWELL REGULATOR CO.
BROWN INSTRUMENTS DIVISION
4510 Wayne Ave., Philadelphia 44, Pa.
Offices in principal cities of the United States, Canada and throughout the world

Write, today, for your copy of Catalog 6709 . . . for complete information on Brown Thermometers. No obligation.

BROWN *Advanced Instrumentation* FOR THE PAPER INDUSTRY
Product of Honeywell

UNDERWRITERS
DEALERS
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Industrial, Utility, Railroad Bonds

Preferred and Common Stocks

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KIDDER, PEABODY & CO.

Founded 1865

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Financial Record

	Per Share Earnings		Indic.	March 8
Preferred Stocks	Calendar Year 1947	Calendar Year 1948	Annual Divid. Rate	Approx. Market Price
Armstrong Cork Co. $3.75 Cum.	$38.64*	$46.33*	$3.75	99½
Armstrong Cork Co. $4.00 Cum. Conv.	38.64*	46.33*	4.00	109½
Celotex Corp. 5% Cum.	24.25c	21.22g	1.00	17⅛
Champion Paper & Fibre $4.50 Cum.	65.90f	61.80j	4.50	98¼
Container Corp. of Amer. 4% Cum.	102.74	105.41	4.00	96½
Crown Zellerbach $4.20 Cum.	56.40f	63.54g	4.20	96½
Crown Zellerbach $4.00 Cum. Conv. 2nd	53.96f*	60.21g	4.00	94½
Dixie Cup Co. $2.50 Cum. Conv. Cla	9.16	9.61m	2.50	49½
Flintkote Co. $4 Cum.	81.91	83.25	4.00	99½
Robert Gair Co., Inc. 6% Cum.	20.11	17.08	1.20	16¾
International Paper Co. $4 Cum.	236.51	242.27m	4.00	96⅝
Johns-Manville $3.50 Cum.	128.81	209.89	3.50	108¾
Kimberly Clark Corp. 4½% Cum.	70.03	82.79m	4.50	104
Kimberly Clark Corp. 4% Cum. Conv. 2nd	41.60*	49.18*m	4.00	96¼
MacAndrews & Forbes 6% Cum.	62.20	59.89m	6.00	137½
Mead Corp. 4¼% Cum.	81.56	80.43m	4.25	76
Mead Corp. 4% Cum. Conv. 2nd	33.62*	32.68*m	2.00	31½
Paraffine Cos. Inc. 4% Cum. Conv.	152.76a	156.11	4.00	103
Rayonier Inc. $2 Cum.	13.58	16.43	2.00	32¼
St. Regis Paper Co. 4.40% 1st A	76.93	85.00m	4.40	84⅛
Scott Paper Co. $3.40 Cum.	43.95	59.06	3.40	93⅜
U. S. Gypsum Co. 7% Cum.	211.34	314.45	7.00	180
United Wallpaper Inc. 4% Cum. Conv.	(d)1.35a	(d)0.79	2.00	22⅞
West Virginia Pulp & Paper 4½% Cum.	75.75c	81.01g	4.50	105½
Common Stocks				
APW Products Co.	$1.24	$1.32m	$0.25	4
American Writing Paper Corp.	1.61	(d)0.15	0.25	5¼
Armstrong Cork Co.	6.41	7.54	3.00	45⅛
Celotex Corp.	6.59c	5.13g	2.00	19
Certain-Teed Prods. Corp.	3.75	4.01	1.15	11⅝
Champion Paper & Fibre	5.57f	6.09j	2.00	22⅛
Congoleum Nairn Co.	4.55	5.78	2.25	28¼
Container Corp. of America	10.09	10.12	4.50	34⅞
Crown Zellerbach	6.81f	7.20g	2.00	25⅛
Dixie Cup Co.	5.87	6.26m	1.00	28⅛
Eastern Corp.	5.02	6.51m	1.00	12⅜
Flintkote Co.	6.27	5.86	2.50	25⅞
Robert Gair Co., Inc.	3.18	2.67	0.70	6⅛
Great Northern Paper Co.	4.56	4.55m	2.80	38⅛
International Paper Co.	15.02	15.39m	5.00	48⅜
Johns-Manville Corp.	3.17	5.22	2.00	37¾
Kimberly-Clark Corp.	4.29	5.16m	1.65	20½
MacAndrews & Forbes Co.	3.68	3.53m	2.50	32¾
Marathon Corp.	3.39c	4.08g	1.40	19⅞
Mead Corp.	7.33	7.11m	2.00	15½
National Container Corp.	4.13	2.86m	0.80	7⅛
Paraffine Cos. Inc.	2.40x	2.45	1.20	17⅝
Rayonier, Inc.	7.30	9.09	2.00	28¼
Ruberoid Co.	9.89	11.80	3.25	51
St. Regis Paper Co.	2.66	2.86m	0.80	8
Scott Paper Co.	3.02	4.15	2.50	48½
Sutherland Paper Co.	6.87	6.02	2.50	32⅜
Taggart Corp.	1.29	N.A.	0.60	10⅞
Union Bag & Paper Corp.	7.93	9.17	4.80	28⅛
United Board & Carton	4.95b	2.04h	(e)	6
U. S. Gypsum Co.	10.00	15.04	6.00	100
United Wallpaper	(d)10.11a	(d)10.10	(n)	3¼
West Virginia Pulp & Paper	11.40c	11.51g	4.00	38¾

(a) Year ended 6/30/48
(b) Year ended 5/30/48
(c) Year ended 10/31/47
(d) Deficit
(e) Omitted dividend 2/4/49
(f) Year ended 4/30/48
(g) 12 months to approximately 1/31/49
(h) 12 months to 11/13/48
(j) 8 months to 12/31/48
(k) 12 months to approximately 10/30/48
(m) 12 months to approximately 9/30/48
(n) Last payment 25c, 9/16/47
(*) Pro forma—Earnings per combined preferred shares.
(N.A.) not available

Dividends Declared

Sutherland Paper Co. declared a dividend of 50 cents a share on its outstanding 344,000 shares of common stock, payable March 15 to stockholders of record March 1.

Celanese Corp. of America on March 1 declared a dividend of 60 cents per share on its common stock, payable March 31 to stockholders of record March 11, and regular quarterly dividends for the current quarter of $1.18¾ on the first preferred stock,

$4.75 series, and $1.75 per share on the 7 percent second preferred stock, both payable April 1 to stockholders of record March 11.

Fraser Companies Ltd. have declared a dividend of $1.33 per share on its 4¾ percent cumulative redeemable sinking fund preferred shares for a period of three months and 11 days from December 21, 1948, to April 1, 1949, payable April 1 to shareholders of record on March 10. Also another dividend has been declared of 50 cents per share on the common stock for the quarter ending March 31 payable April 25 to shareholders of record March 31.

Provincial Paper Ltd. has declared a regular quarterly dividend of 1 percent on its preferred stock, payable March 16 to shareholders of record March 5.

Fort Wayne Corrugated Paper Co. has declared a dividend of 25 cents per share on its common stock, payable March 15 to holders of record March 1.

Haloid Co. has declared the regular quarterly dividend of 25 cents a share on its common stock and $1 a share on its 4 percent preferred.

Consolidated Paper Co. declared a dividend of 25 cents a share, payable June 1 to holders of record May 21.

Rule Being Restored

NEW YORK — The Western Lines have approved extension of Classification Rule No. 51 to become effective August 31 in Western Territory. This rule provides that carload shipments may be stopped once in transit to complete loading or for partial unloading (but not both). However, the rule does not limit or restrict stopping in transit privileges published in individual lines tariffs. The Transportation Committees, both of the National Ass'n. of Waste Material Dealers, Inc., and the New York Ass'n. of Dealers In Paper Mills' Supplies, Inc., are trying to have the Eastern and Southern Lines concur in the extension of this rule to conform with the above.

St. Croix Stock-Split

BOSTON—St. Croix Paper Co., stockholders will vote March 9 on a proposal to change the par value of the firm's stock from $100 to $25, thus increasing the authorized number of shares from 30,000 to 120,000 and outstanding shares from 27,322 to 109,288.

Harvie Alberta Deputy

OTTAWA—John Harvie has been appointed by the Alberta Government to be the Deputy Minister of Lands and Forests in that Canadian province.

New Position Created

BUFFALO, N.Y.—Francis P. Richardson has been named to the new position of assistant manager of the National Gypsum Co.

Alhydro FLOC PRODUCER

...REDUCES CHEMICAL STORAGE PROBLEMS IN INDUSTRIAL OR MUNICIPAL WATER TREATMENT PLANTS

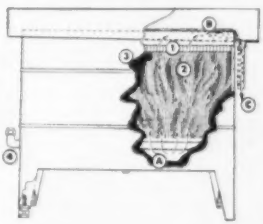
"Right!

69 lbs. of aluminum treats as much water as nearly 3/4 ton of coagulants"

By employing the principle of low voltage, DC, electrolytic dissolution of aluminum plates in water, the Alhydro Floc Producer greatly reduces the necessity for protecting and storing bulky chemicals. In addition, the Alhydro Floc Producer easily provides the simplest and most foolproof answer to the problem of removing color and suspended matter from process or drinking water. It produces a readily controllable concentration of remarkably stable floc . . . even under water conditions so adverse that floc formation would be impossible with older methods.

One Alhydro Floc Producer will treat an average of 300,000 gallons of water per day . . . but the units can be used singly or in multiples in present or proposed water treatment plants.

SKILLFUL ENGINEERING OF THE ALHYDRO FLOC PRODUCER
gives simplicity of operation . . . ease of maintenance



1. Connector Bar on each side of tank
2. Alternate Stainless Steel and Aluminum Plates.
3. Composition rubber lined stainless steel tank
4. Water Feed Line easily removed for inspection

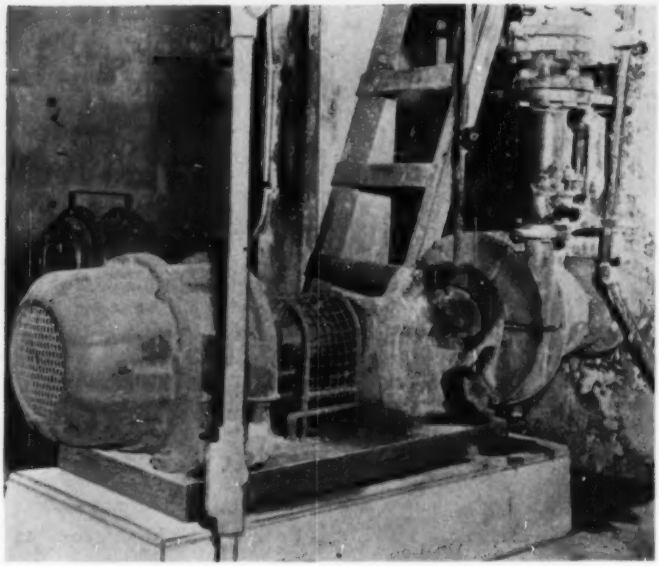
A. Water enters tank through slots in feed pipe.
B. Concentrated floc is carried to the top and leaves through discharge trough.
C. Discharge pipe feeds floc to raw water.

DESCRIPTIVE FOLDER--FREE!

Read this folder which illustrates and describes the advantages of the compact Alhydro Floc Producer. See how you can simplify the treatment of drinking water or water for industrial use. Write for your free copy today.

ALHYDRO, INC. DEPARTMENT 3-C 516 N. CHARLES ST., BALTIMORE 1, MD.

Equipment & Supplies



Milk of Lime Pumps

Milk of Lime pumps are, basically, single-stage, single-suction, open impeller centrifugal pumps specially designed for milk of lime service. Bearing bracket construction is of heavy, high-grade cast iron, all pump parts in contact with the liquid, of Ni-hard, said to be the finest possible alloy where abrasive liquids are being pumped. However, since Ni-hard is so hard (600 Brinell) that it is impossible to drill or tap, manufacturer states that the engineering problem was solved by clamping pump covers tightly in place with two steel plates, one of which is bolted to bracket to give assembly complete rigidity. Capacity legend of each pump is 150 g.p.m., head 35 feet, operates at 1150 r.p.m. Drivers are connected by flexible couplings. For details and prices write to Byron Jackson Co., Pump Div., Terminal Annex, Box 2017, Los Angeles 54, Calif.

Plastic Paint Coating

Corrosion resistant plastic coatings have been developed especially for the pulp and paper industry for the protection and maintenance of chemical processing equipment. Described as an inexpensive, easily applied, high solids synthetic paint, the coating is said to be unsurpassed in protecting metals, wood and ceramic surfaces against chemical attack by corrosive fumes, condensates, spillage, etc., and to dry quickly by solvent evaporation to an adhesive, hard-wearing, flexible glossy coating without the necessity of priming the surface being coated. Manufacturer states that the compounding ingredients have been selectively determined by laboratory research to provide the utmost adhesion and resistance to chemical attack without the use

of conventional priming and intermediate coating procedure to achieve a corrosion resistant film for general maintenance purposes. Further to cut the cost of corrosion protection, formulations have exceptionaly high solids content which result in a coating of substantial body and hiding power with coverage of 350 to 450 square feet of area per gallon per coat when applied by brushing directly from container. The plastic coatings are said to be unaffected by all alkalies as well as by their salts and by most mineral acids, also to be mert to alcohols, soaps, water, oxidants, food and fruit acids, oils, aliphatic hydrocarbons, gasoline (low octane) and many other corrosive reagents. Moisture vapor transmission rate for films of 0.002 ins. thickness is given as less than 2.0 grams per 100 square ins. of area for 24 hours at 100 percent relative humidity. Non-oxidizing coatings are recommended by manufacturer for services tto 180 F, and to maintain flexibility over a wide range of temperatures. For details and prices on CycLon coatings, write to Munray Products, Inc., 12402 Crossburn avenue, Cleveland 11, Ohio, sales division of Poly-Cyclo Products Co.

NBS Hydrocarbon Samples

NBS standard samples of hydrocarbons for calibrating analytical instruments and apparatus in research, development and analytical laboratories of petroleum, rubber, chemical and allied industries are now available.

New NBS Standard Hydrocarbon Samples

NBS sample number[a]	Compound	Amount of Impurity[b] mole %	Volume per unit ml. (liq.)
535-5S	3-Methyl-trans-2-pentene	0.14 ± 0.09	5
536-5S	4-Methyl-cis-2-pentene	0.25 ± 0.07	5
558-5S	2, 3-Pentadiene	0.15 ± 0.07[d]	5
559-5S	n-Dodecane	0.031 ± 0.025	5
560-5S	1-Methyl-3-isopropylbenzene	0.064 ± 0.038	5
561-5S	trans-Decahydronaphthalene (trans-Bicyclo-[4, 4, 0]-decane)	0.04 ± 0.03	5

[a] The designation "-5S" following the sample number indicates a sample of 5 ml. sealed "in vacuum" in a special Pyrec glass ampoule with internal "break-off" tip.

[b] The purity has been evaluated from measurements of freezing points as described in *J. Research* Natl. Bur. Standards *35*, 355 (1945) RP1676; unless otherwise indicated.

[c] Tolerance approximately ± 10 percent.

[d] When sealed Polymer formed may be removed as residue by simple vaporization of the sample "in vacuum" at an appropriate temperature.

Through a cooperative program begun in 1943, the National Bureau of Standards and the American Petroleum Institute have prepared a total of 150 compounds as NBS standard samples. Recent additions to the series announced by the Bureau are listed in the table above. Instructions for transferring standard samples of hydrocarbons "in vacuum," also a complete list of NBS standard samples of hydrocarbons and ordering instructions may be obtained from the National Bureau of Standards, Washington 25, D.C.

REPEAT ORDERS tell the story
One Company ordered 1 Brammer Bought 4 more
Another Company ordered 1 Brammer Bought 2 more
Another Company ordered 1 Brammer Bought 5 more
Another Company ordered 1 Brammer Bought 7 more
Another Company ordered 2 Brammers Bought 3 more
Another Company ordered 3 Brammers Bought 9 more
Another Company ordered 1 Brammer Bought 4 more
Fifty-five percent of total BRAMMER purchases during last year represented repeat orders.
Based on actual operating experience of BRAMMERS already in use, these additional units were purchased to keep pace with present trends of increased production, improved quality, and lower costs.
Such acceptance merits your investigation of the many operating and economy advantages which the BRAMMER offers. Why not consult us regarding your stock consistency problems?
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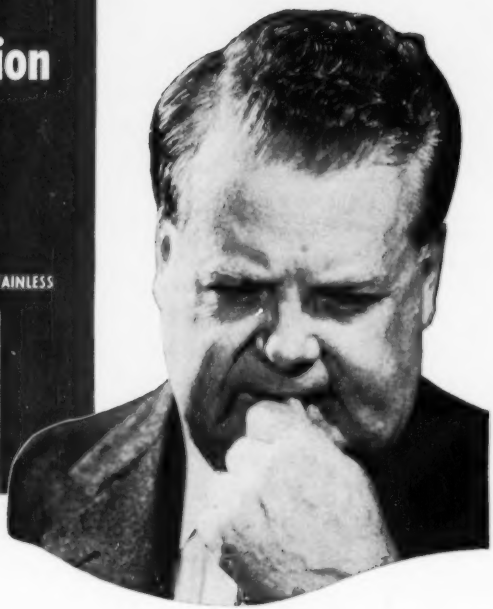
122 EAST 42 nd STREET ● NEW YORK 17, N. Y.



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. . . take it up with Tubing Headquarters

TUBING in paper mill service is so important that it deserves the best engineering advice you can get on its selection and use. We are prepared to give you just that.

There are two reasons why we at NATIONAL Tube can help you obtain better results from tubing applications—why it will pay you to put your tubing problems up to us.

First, because NATIONAL Tube Company makes seamless steel tubing in the widest range of sizes and wall thickness and in a *complete* range of steel grades—from low carbon to the finest alloy and stainless steel—able to take care of any paper mill requirement, whether simple or unusually severe.

And, second, because we never lose sight of the fact that every installation is an individual problem in material selection, and must be treated as such.

As a result, our recommendations are based solely on the particular requirements your service involves. In other words, *we fit the tubing to the job, not the job to the tubing.*

If you want that kind of approach to your tubing problems bring them to us.

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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

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PIPE AND TUBES

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UNITED STATES STEEL

craftsmanship

Another good reason why Appleton Wires are Good Wires

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Craftsmanship is more than ability accumulated through long years of experience . . . it's how a specialist feels toward his work and toward his place of employment. In fifteen years only one skilled employee has left Appleton Wire Works, Inc. We are proud of our record. We are proud of Appleton craftsmanship.

APPLETON WIRE WORKS, INC.

APPLETON, WISCONSIN

Meetings

MARCH 17-18: Marketing Conference, American Management Ass'n., Hotel Pennsylvania, New York.

MARCH 22: American Society for Testing Materials, Philadelphia District. Franklin Institute.

MARCH 24: Technical Ass'n. of the Pulp & Paper Industry, Delaware Valley Section, Engineer's Club, 1317 Spruce Street, Philadelphia. For details, write to Miss L. V. Hans, secretary-treasurer, 1010 Delaware Avenue, Wilmington, Del.

APRIL 4-6: National Paper Trade Ass'n., Annual Convention, Waldorf-Astoria, N. Y. For details, write to A. H. Chamberlain, executive secretary, National Paper Trade Ass'n., 220 East 42nd Street, N. Y.

APRIL 11-14: National Ass'n. of Corrosion Engineers, Fifth Annual Conference and Exhibition, Netherlands-Plaza Hotel, Cincinnati, Ohio. For details, write to W. Z. Friend, NACE, 67 Wall Street, New York 5, N. Y.

APRIL 14-15: Production Conference, American Management Ass'n., Hotel Pennsylvania, New York.

APRIL 28: Technical Ass'n. of the Pulp & Paper Industry, Delaware Valley Section, Engineer's Club, 1317 Spruce Street, Philadelphia, Pa. For details, write to Miss L. V. Hans, secretary-treasurer, 1010 Delaware Avenue, Wilmington, Del.

MAY 2-4: Forest Products Research Society, Third Annual Meeting, Civic Auditorium, Grand Rapids, Mich. For further details, write to C. E. Van Hagan, Sec'y.-Treas., Forest Products Research Society, Box 2010, University Station, Madison 5, Wis.

MAY 10-12: Packaging Conference, American Management Ass'n., Auditorium, Atlantic City, N. J.

MAY 10-13: Eighteenth National Packaging Exposition, Public Auditorium, Atlantic City, N. J. For details, write to Mr. James O. Rice, Sec., 330 West 42nd St., New York, N. Y.

MAY 15-20: Third Annual New York Stationery Show, New Yorker Hotel, N. Y. For further details, write to George F. Little, Management, 220 Fifth Ave., N. Y.

MAY 19-20: Institute of Paper Chemistry, Thirteenth Annual Executives Conference, Appleton, Wis. For details, write to John G. Strange, secretary.

MAY 26: Technical Ass'n. of the Pulp & Paper Industry, Delaware Valley Section, Engineer's Club, 1317 Spruce Street, Philadelphia, Pa. For details, write to Miss L. V. Hans, secretary-treasurer, 1010 Delaware Avenue, Wilmington, Del.

MAY 26-27: Insurance Conference, American Management Ass'n., Hotel New Yorker, New York.

MAY 30-JUNE 2: Annual Convention, Chemical Institute of Canada, Halifax, N. S.

JUNE 8-9: General Management Conference, American Management Ass'n., New York.

JUNE 15-17: American Pulp & Paper Mill Superintendents Ass'n., Inc., 1949 Convention, Chalfonte Haddon Hall, Atlantic City, N. J. For details, write to George W. Craigie, secretary-treasurer, 220 East Forty-second Street, New York City 17.

JUNE 17-18: Paper and Twine Ass'n., French Lick Springs, Indiana. For details, write to Mr. John L. Richey, Sec.-Treas., Suite 651-653, Hotel Sinton, Cincinnati 2, Ohio.

JUNE 27-JULY 1: Annual Meeting, American Society for Testing Materials, Chalfonte-Haddon Hotel, Atlantic City, N. J.

SEPTEMBER 21-23: Direct Mail Advertising Association, Inc., Annual Conference, Congress Hotel, Chicago. For details, write to Frank Frazier, Direct Mail Advertising Ass'n., Inc., 17 East 42nd Street, New York 17.

OCTOBER 4-7: Fourth Annual Industrial Packaging & Materials Handling Exposition, Convention Hall, Detroit, Michigan. For further details, write to C. J. Carney, Jr., Managing Director, Soc. of Industrial Packaging & Materials Handling Engnrs., 20 W. Jackson Blvd., Chicago 4, Ill.

OCTOBER 10-14: West Coast Meeting, American Society for Testing Materials. (First national meeting of ASTM on West Coast.) Fairmont Hotel, San Francisco, California.

OCTOBER 24-28: National Safety Council, 1949 National Safety Congress, Chicago. For details, write to Harley B. Goodrich, National Safety Council, 20 North Wacker Drive, Chicago 6, Ill.

NOVEMBER 1-5: Pacific Chemical Exposition, California Section, American Chemical Society, San Francisco Civic Auditorium, San Francisco, Calif. For details, write to Marcus W. Hinson, exposition manager.

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. . . THAN EVER BEFORE

MORE and better napkins with our post-war No. 2-A folder. Makes all folds — quarter fold, eighth fold, sixteenth fold and dispenser fold — on one machine. This unusual versatility, plus our usual quality, makes this multiple duty folder an important addition to your production department. Write for information.

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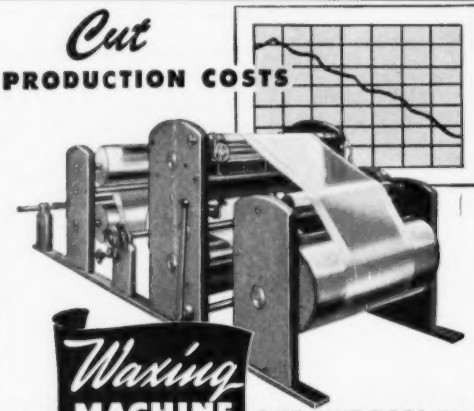
PRODUCTION COSTS



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MACHINE
ONE UNIT DOES MULTIPLE JOBS

The demand for waxed papers is greater than ever before — despite raw paper shortages. There is a Hudson-Sharp waxer designed for any one of the many wax processes. No. AW-3, illustrated, is our wax coater — for single or double facing.

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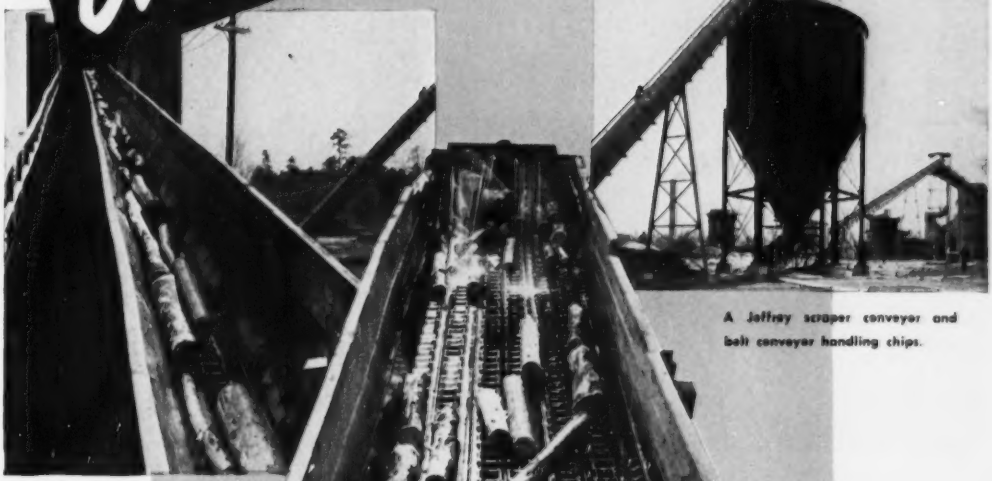


A Jeffrey scraper conveyor and belt conveyor handling chips.

Jeffrey Pulpwood Conveyors (above and right)

Chain Conveyors
Spiral Conveyors
Belt Conveyors
Bucket Elevators
Feeders

Re-Chippers
Screenings Grinders
Bark Shredders
Saltcake Crushers

These illustrations are typical of how Jeffrey Equipment serves the Pulp and Paper Industry in the handling of pulpwood, chips, bark, salt cake, etc., through the various stages of preparation. Years of experience in designing and building specialized equipment for handling and processing operations in almost every industry has given Jeffrey engineers the knowledge to do the job efficiently and economically for YOU. More detailed information upon request.

THE JEFFREY MANUFACTURING COMPANY
731 North Fourth Street, Columbus 16, Ohio

ESTABLISHED 1877

Complete Line of Material Handling, Processing and Mining Equipment

Literature

Rapids-Standard Co., Inc., Grand Rapids, Mich. Bulletin, "Rapistan, Floor-Veyor Power Belt Conveyor." Illustrated to show how unit may be used to receive and transport merchandise from trucks to upper floor warehousing space. Arrows point to main construction features on a full-length view. Salient features, belt widths and types, available motors and other specifications also provided.

Henry A. Gardner Laboratory, Inc., Apparatus Div., 4723 Elm street, Bethesda, Md. Bulletin, "Instruments for Measuring Appearance and Other Optical Factors." Describes four new type instruments for measuring appearance, also Multipurpose Reflectometer.

Office of Technical Services, Dept. of Commerce, Washington 25, D. C. Book, "PB 94486, Stump Removal Project," price $1.00. Make check or money order payable to the Treasurer of the United States. Reports on wartime research project to devise methods for recovering pulpwood from tree stumps which pointed the way to a more economical method for clearing small land areas. Describes use of *Macite*, a TNT-coated ammonium nitrate mixture for economical stump-clearing. Reports that it is not economically practical to try to recover pulpwood from tree stumps. Suggests that the perfecting of equipment for cutting down trees level with the ground—rather than 12 to 18 inches above ground—would materially increase yield of pulpwood.

Supt. of Documents, Government Printing Office, Washington 25, D. C. Booklet, "How Manufacturers Reduce Their Distribution Costs," price 35 cents. A study of the sales practices of a representative group of producers who have effectively reduced their marketing expenses and simultaneously increased their overall profits. Case histories summarized show that *selective distribution* rather than attempts to achieve *100 percent coverage* is the key not only to reduced distribution costs but also to increased sales. Cites examples of one firm which cuts its distribution expense almost in half while pushing its sales up 76 percent by shifting its selling effort from unprofitable accounts to profitable customers. Unprofitable accounts were found to be 68 percent of total number of customers. Survey covers actual operating methods of 45 firms ranging from small to very large and located in different parts of the country, and manufacturing and distributing a wide variety of products. Information was obtained first-hand through field surveys analyzing actual techniques of cooperating companies. No firm names are mentioned in accordances with wishes of the companies surveyed.

Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. Book, "Handbook of Radioactivity and Tracer Methodology," price $20.00. Make money order or check payable to the Treasurer of the United States. Prepared by the Air Materiel Command of the U. S. Air Forces and rated as the most comprehensive work on this subject to date. Concerned with tracer techniques, some of the fundamental concepts of nuclear physics, isotope production and instrumentation. Reports also contains a bibliography containing references to work done with cyclotron-produced isotopes. Three main divisions of the handbook are: Nuclei and Radioactivity; Measurement of Isotopes; and Biological and Medical Applications of Isotopes. According to the introduction, the book was expanded to make it more intelligible to those less conversant with the terminology of nuclear physics and tracer methodology.

De Laval Steam Turbine Co., Trenton, N.J. Bulletin, No. 810-1. "De Laval Pumps for Paper and Pulp Mill Service". Distinguishing features of new line of pumps to meet highly specialized requirements of the paper industry are fully described.

Building

- **FOR THE PAPER INDUSTRY**
- We design, build, and equip paper and pulp mills ... steam generating plants ... and facilities for eliminating stream pollution.
- Under one contract and one responsibility, we deliver jobs complete, ready for operation.
- We also furnish engineering reports and surveys. Current cost data available at all offices.

The H.K. Ferguson Co.
INDUSTRIAL ENGINEERS AND BUILDERS

THE FERGUSON BUILDING • CLEVELAND, OHIO
OFFICES IN NEW YORK, HOUSTON, CHICAGO, CINCINNATI AND LOS ANGELES

Collins Option Expires

NORTH WILBRAHAM, Mass. — The Collins Mfg. Co., paper mill, owned by the S. R. Whiting estate of Holyoke, was back "up in the air" again on March 4 when the two-month option of Carl Katz, New York used-hand machinery dealer, to buy the machinery at the mill, lapsed.

It is reported that the Whiting family shortly will petition the Probate Court in Springfield for permission to reduce substantially the first mortgage held by the Union Trust Co., of Springfield. This will enable the Whitings to resume negotiations for the disposition of the mill, which has been closed for several months.

Parsons Re-elects All

HOLYOKE, Mass. — Parsons Paper Co., stockholders on February 19 re-elected all present officers and directors. The officers are: Dr. Edward P. Bagg, president; Henry V. Burgee, vice-president and general manager; N. J. Patterson, vice-president; Elmer B. Cooley, treasurer, and Albert S. Canfield, secretary and assistant treasurer. The directors are: Dr. Bagg, Mr. Burgee, Mr. Cooley, Roy E. McCorkindale, Richard M. Weiser, Eliot P. Brooks and John L. Bagg.

Obituary

Joseph Danis, 53, a paperworker associated with the Gatineau, Ont., mill of the International Paper Co., of Canada, for 21 years, died instantly on February 24 when his head was crushed in a paper machine. Surviving Mr. Danis are his widow, three sons and a daughter.

Atwell B. Williams, 52, sales manager of the mechanical roll division of the American Wringer Co., Inc., Woonsocket, R.I., died at his home in Smithfield, R.I., on February 27. Surviving him are his widow, Mrs. Fannie Williams, and a sister, Mrs. Mary DeWitt.

Protests Rail Rate Hike

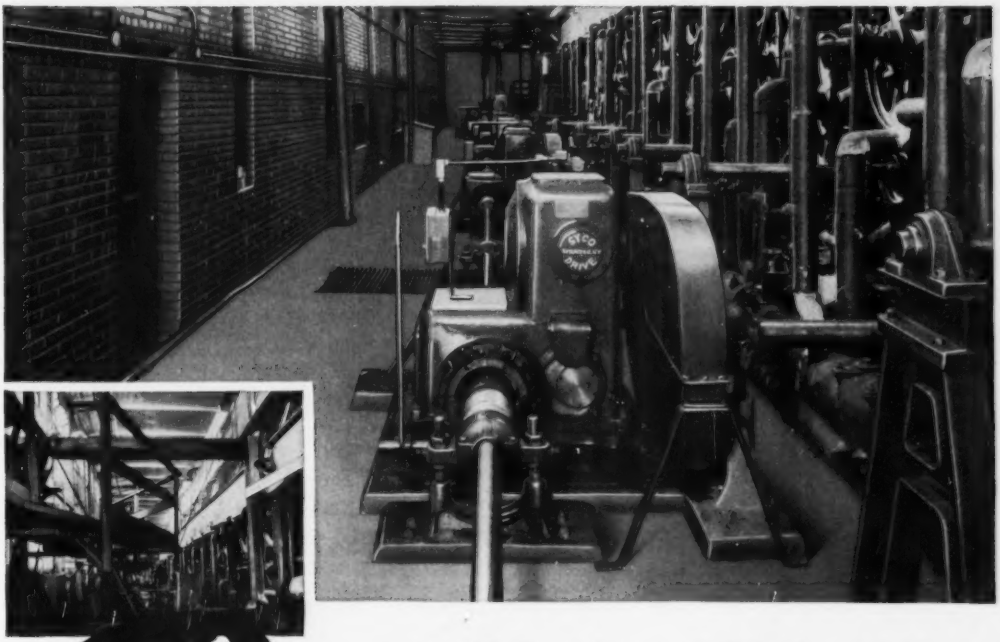
(Continued from page 11)

by a general increase in transportation costs" under present conditions.

Mr. Tinker cited northern Wisconsin specifically, as being so largely dependent on the paper industry that any substantial decline in industry welfare in that area would "badly affect the economy" of the whole section.

He said a number of mills in the industry, which he did not locate, have dropped from a 7-day week to 4 days, and "some mills are down completely for lack of business."

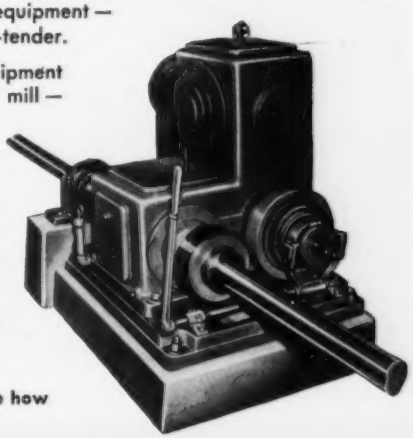
Like More Floor Space Around Your Machine?



SYCO Saves Half the Space of Other Drives

The modern SYCO Paper Machine Drives save 50%, or more, of the space used by old style drives. The clean, compact, soundly-engineered SYCO Drive unit is self-contained. Just one glance at a SYCO installation reveals usable space available for auxiliary equipment — how safely accessible the paper machine is to the back-tender.

With Modern SYCO Drives, there is no drive equipment below or above the floor-level. You have a "clean" mill — uncluttered with overhead shafts, pulleys, idlers, counter-shafts and belts, guards for belts and gears, superstructure, ladders or catwalks.



Even more important is the better performance of your paper machine with SYCO Drive. The close, accurate speed control is easily adjusted — holds the individual sections in precise speed ratio — preserves uniform tension on the sheet at all times. This means smooth running, fewer interruptions — and increased production.

Write for full information on the SYCO Drives — see how readily they can be applied to your machine.

SYCO MANUFACTURING CORP., 324 West Fayette St., SYRACUSE, N.Y.

Suppliers

With the retirement of O. N. Stevens as operating vice-president of the Southern Alkali Corp., effective March 1, several management changes have been announced by Harold F. Pitcairn, president. Southern Alkali Corp., jointly owned by the Pittsburgh Plate Glass Co. and the American Cyanamid Corp., operates alkali producing plants in the southwest. Stanley J. Hultman, superintendent of the Lake Charles, La., plant, has been named works manager at Corpus Christi; Charles E. Weeks, associated with the Texas operation as auditor and for the past two years assistant to Mr. Stevens, has been named assistant works manager at Corpus Christi. C. K. Ballard, superintendent of the caustic and chlorine department at Lake Charles, has been named plant superintendent at Lake Charles. Other Lake Charles appointments include Alvin T. Raetzch, superintendent of operations; Frank W. Woodman, superintendent of engineering; and Russell S. Clark, divisional power engineer. In addition, Mr. Clark will serve as power engineer consultant to Southern Alkali and Columbia Chemical.

A new type Shartle Junk Remover constructed entirely of stainless steel is being installed as an accessory to the Hydrapulper in the plant of the Continental Paper Co., Ridgefield Park, N. J. The additional cost of stainless steel is expected to be repaid many times over through the longer life of the device.

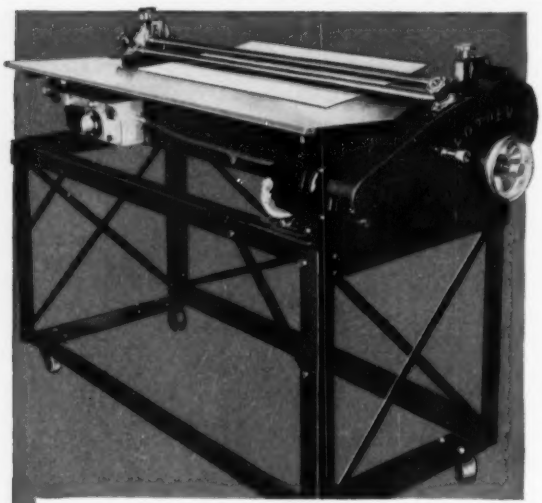
E. W. Twitchell, Inc., Philadelphia, has developed a new type finish for automobile seat cover material. The new finish is the result of a special pretreatment of the paper fabric before application of either vinyl plastic or lacquer. With introduction of the process, Twitchell has also started using a new and more stable type lacquer. The experiments were under direction of William S. Bradford, general manager. Stanley Huss, of the plastic research department, developed the new lacquer.

Frederick C. Bersworth, president of the Bersworth Chemical Co., Framingham, Mass., reports that the firm's chemists have developed a new sequestering agent called Versene Fe-3, effective in sequestering the trivalent iron that often exists as a chemical contaminant in solutions. A Versene Fe-3 solution containing sequestered (i.e., non-ionic) ferric iron also has considerable sequestering action on calcium and magnesium, Mr. Bersworth states. As an example of the sequestering action of the new product, 10 cc of Versene Fe-3 sequesters 167 mg. of ferric iron as well as 158 mg. of calcium at a pH of 7, he points out. "Trivalent iron in water and other aqueous solutions has always caused trouble in the preparation of soaps, fats, oils, emulsions, sanitizing agents, drugs, food products, textiles and metal processing," Mr. Bersworth added. "Until the discovery of Versene Fe-3, there has never been any good sequestering or chelating agent capable of overcoming it."

An invention for eliminating suction roll noise, as revealed in New York recently by a member of the Kimberly-Clark Corp.'s physics research staff, will be made available to the industry in Canada by E. S. Noble, vice-president of the Kimberly-Clark Corp. of Canada states. The development was evolved by Kimberly-Clark and the Beloit Iron Works of Beloit, Wis.

The Hathaway-Thurlow Co., manufacturers representative firm, 1550 First avenue, South, Seattle 4, Wash., is interested in entering the pulp and paper equipment field for lines to be handled in Washington, Oregon, Idaho and British Columbia. Both members of the firm are engineers, Wm. G. Hathaway, manager, states.

Farrel-Birmingham Co., Inc., Ansonia, Conn., has named M. H. Blank as representative in the Detroit area to handle the sale of gears and gear units manufactured at the company's Buffalo, N.Y., plant. Mr. Blank's offices are at 901 Lafayette building, Detroit 26.



GLUE MILL ROLL HEADERS ON A POTDEVIN

A heavy duty 39 or 46 inch Potdevin Gluer will handle your header labels fast. Glued labels come through at 6 inches per second. Potdevins apply a controlled film of glue—for strong all-over adhesion to insure a tightly sealed wrapper. Potdevin Gluers are portable—can easily be moved wherever rolls are being "headed." Mail the coupon for more details.

Please send full information about 39 and 46 inch heavy duty Potdevin Gluers.

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Company.....

Street.....

City..... Zone..... State.....

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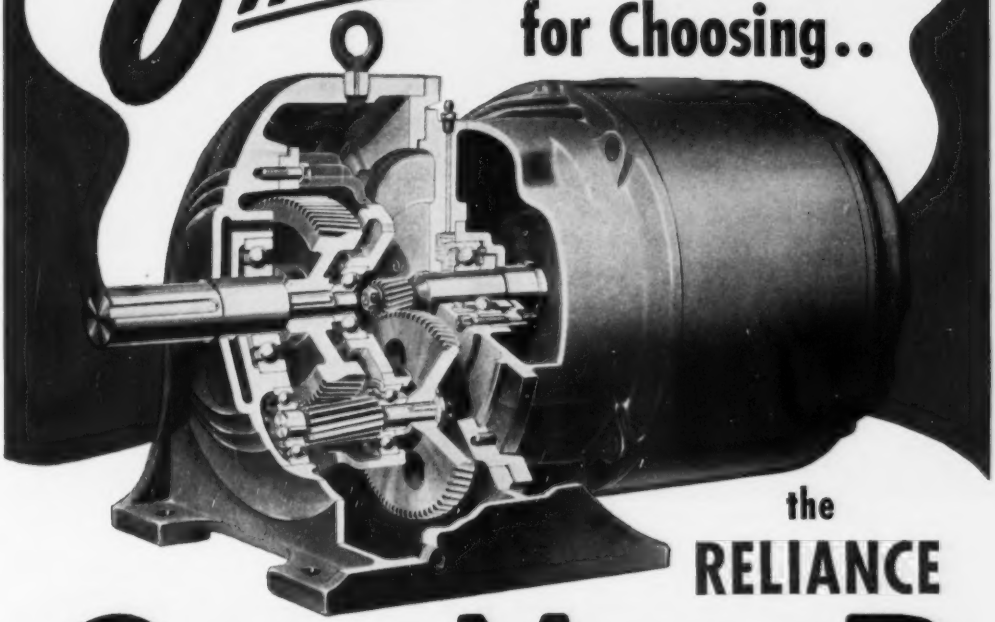

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GEARMOTOR

1 Helical, wear-hardened gears cut from alloy steel forgings and shaved before hardening for correct eccentricity and helical angle and bright, smooth surfaces—factors contributing to quiet operation and longer life.

2 Gear arrangement in simple train minimizes number of moving parts—promotes quietness.

3 Pinion and gear supported and spaced to reduce deflection—permits high load-carrying capacity.

4 Splash system with large oil reservoir assures constant and thorough lubrication of all parts.

5 Anti-friction bearing construction throughout.

6 Reliance *Precision-Built* Motors provide the maximum in dependable and economical power. Types that may be had with GearMotoR are described in GearMotoR Bulletin C-404. Ask also for bulletins describing Reliance *Precision-Built* A-c. Motors—engineered for every power requirement.

Sales Representatives in Principal Cities

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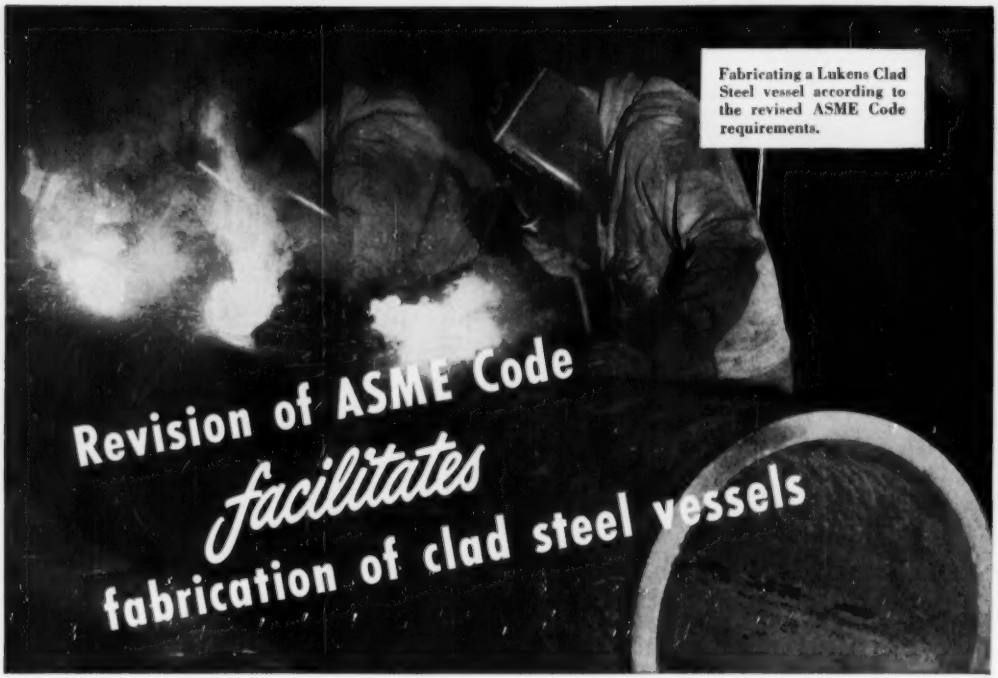
"Motor-Drive is More Than Power"



Fabricating a Lukens Clad Steel vessel according to the revised ASME Code requirements.

As announced recently in Mechanical Engineering, Case 896 of the ASME Code has been further revised. Rulings cover welding procedure and operator qualification requirements, with the result that, in many cases, the fabrication of clad steel equipment is facilitated and speeded up.

All-alloy welds can be used throughout the entire section of a clad steel shell where the small diameter, for example, makes this necessary. Materials meeting Specification SA-263, Grade A (Type 410) can be used without stress relief if the carbon content of the cladding is less than 0.08. Temperature limitations for certain types of clad metals have been modified.

Case 1078, covering the use of linings which are applicable to certain fittings—manways, nozzles and the like—is also now available for the first time.

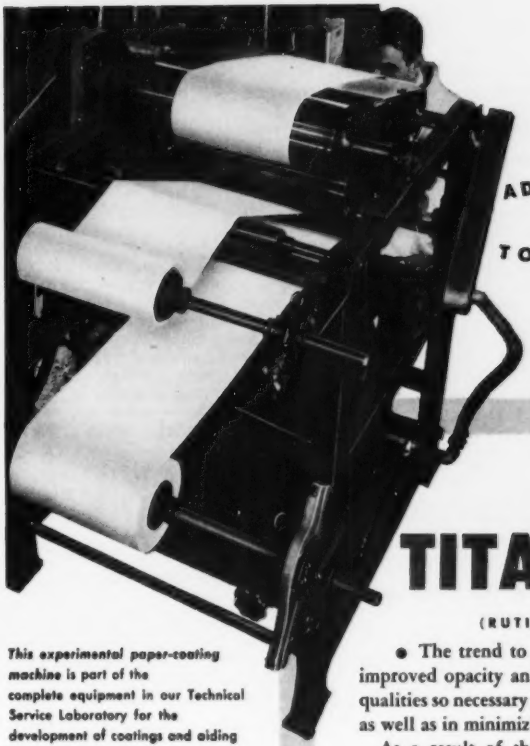
For general information on Lukens Nickel-Clad, Stainless-Clad, Inconel-Clad and Monel-Clad Steels, write for Bulletins 255 and 338. Lukens Steel Company, 403 Lukens Building. Coatesville, Pennsylvania.

CLAD METAL STEEL

LUKENS
Nickel-Clad Stainless-Clad
Inconel-Clad Monel-Clad
STEELS

SOLID METAL ADVANTAGES WITH CLAD STEEL ECONOMY

• • SPEED SCRAP TO THE MILLS TO MAKE MORE STEEL • •



This experimental paper-coating machine is part of the complete equipment in our Technical Service Laboratory for the development of coatings and aiding customers in the solution of specific problems.

ADD HIGH OPACITY . . . BRIGHTNESS

TO MACHINE-COATED PAPERS

WITH

TITANOX-RCHT

(RUTILE-CALCIUM PIGMENT)

● The trend to less weight and thinner coatings calls for improved opacity and brightness. TITANOX-RCHT imparts these qualities so necessary in assuring clear printing and vivid pictures as well as in minimizing "show-through."

As a result of this high opacity at reduced pigment cost, TITANOX-RCHT has advantageously taken the place of titanium-barium pigment. And in many cases proves attractive in comparison with straight titanium dioxide TITANOX-A-WD. For example, from practical tests, the average weight ratios of these pigments for equal opacity and brightness are indicated as follows:

TITANOX-A-WD	1
TITANOX-RCHT	2.5
titanium-barium	3

Our Technical Service Laboratory staff will be glad to discuss with you the choice of titanium pigment to best suit your needs. Call or write our nearest office. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; 104 So. Michigan Ave., Chicago 3, Ill.; 2600 So. Eastern Ave., Los Angeles 22, Calif. Branches in all other principal cities.

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Subsidiary of NATIONAL LEAD COMPANY

7340

Australia

The latest Government classification of factories shows that throughout Australia there are now 12 engaged in the manufacture of paper; 89 in the manufacture of cardboard boxes, cartons and containers; 39 in the manufacture of paper bags; and 91 in the manufacture of stationery.

The papermaking industry employs 4,705 workers (4,162 males and 543 females); the box and carton industry employs 3,600 (1,667 males and 1,933 females); the paper bag industry employs 793 (304 males and 489 females) and the stationery industry employs 2,768 (1,300 males and 1,468 females).

Salaries and wages paid in these allied industries during the financial year July 1 to June 30, were: papermaking £1,577,146; box and carton making £840,586; paper bag making £170,009; and stationery manufacture £673,595.

The newspaper, general printing and manufacturing stationery industries used, during the year 120,136 tons of newsprint, 659,732 pounds bulk cigarette papers, other papers valued at £5,766,249, and cardboard worth £2,148,856.

Articles produced included: Cardboard boxes, £3,347,147; cigarette papers, £220,775 (5,590,083,000); envelopes, £545,251; exercise books, registers, books of account, etc., £619,225; writing pads, £253,937; stay paper and cloth, £105,781; paper bags, £938,285; paper containers, £506,440; and paper serviettes, towels, etc., £38,517.

The first of three shipments of sections for a papermaking machine for Australian Newsprint Mills recently arrived at Hobart for delivery to Boyer (Tasmania). It is hoped that the remaining sections of the plant will arrive at a reasonably early date.

* * *

To finance the establishment of pulp mills at Killafaddy, near Launceston (Tasmania), Tasmanian Board Mills, Ltd., is to raise £500,000 by a share issue. The firm of K. D. Atkins, Ltd., sponsor of Tasmanian Board Mills, is now to be absorbed as a subsidiary. Captain I. T. Holyman, chairman of directors, states that a new pulping plant and a solid container board making plant has been purchased from a manufacturer in Scotland. "An enormous demand for pulp products, both in Australia and overseas, now exists," he says, "and we have carried out investigations into the suitability of Tasmanian eucalyptus for pulping by a process hitherto not used in Australia, but most successfully used in the United States." It is understood that the Tasmanian Government has granted the company concessions over large timber areas.

Paperholdings, Ltd., has been registered with a capital of £250,000 to acquire and expand the paper converting businesses of Simpson Hain (1940) Pty., Ltd., Sydney, and Paper Processors Ltd., Sydney, together with the paper merchandising business of L. A. Wade Pty., Ltd., Melbourne. Acquisition of the companies will be effected by the purchase, by Paperholdings, Ltd., of the companies' share capital through the issue at par to their shareholders of 175,000 fully paid ordinary shares of 5s. each in Paperholdings, Ltd. To provide for expansion of the businesses of the subsidiary companies, a further issue of 175,000 ordinary shares of 5s. each will be offered to the public at par. Upon completion of this issue the paid capital of Paperholdings, Ltd., will be £87,500.

The manufacturing subsidiary companies of Paperholdings, Ltd., produce a variety of lines, principally from various kinds of paper. These include paper novelties, waxed papers, greaseproof lunch wraps, manila document folders, paper serviettes, paper handkerchiefs, crepe paper, facial tissues, laminated bitumenised-reinforced kraft paper for use in the building trades and in the packing of textiles and other materials, and the conversion of transparent film into packages for food and other commodities.

* * *

Australia's first titanium pigment factory was opened recently at Heybridge, near Burnie, Tasmania. This is an undertaking of Australian Titan Products, Ltd., an offshoot of British Titan, which for a long time has been supplying the Australian paper industry. H. S. Tasker, chairman of directors of the parent company, says that the initial output will be five tons daily or 1,800 tons a year. But it is hoped that, within 12 months, the rate will be stepped up to seven tons daily, and later to at least ten tons.

RALSTON ACQUISITIONS

Wm. Thomas (left) has been appointed technical advisor in research and development, and Walter L. Fey (right) sales promotion and field representative of the W. Ralston & Co., Inc., Old Bridge, N. J. . . . Mr Thomas will be in charge of the Raltex laboratory at the plant. . . Mr. Fey's territory embraces Northern New York and Eastern Pennsylvania. He is a charter member of the National Ass'n., of Packaging & Materials Handling Engineers, and also belongs to the Allied Paper Salesmen's Ass'n., of New York.

Reichhold Chemicals, Inc. (Australia) Pty., Ltd., has installed a chemical color division at Botany, New South Wales, which, it is stated, will draw upon the technical resources of R.C.I. associate companies in the United States, Great Britain and Europe. This company claims that it will offer a new and improved spectrum for the Australian printing industry.

* * *

The fact that recently the basic wage was increased by 3s. weekly draws attention to a recent statement by Sir Norman Brookes, chairman of directors of Australian Paper Manufacturers, Ltd., who said: "A two-shilling increase in the basic wage lifts our direct wages bill by £25,000 per annum, which means an added cost per ton of product of four shillings. The added indirect cost is at least as much again."

United Foil Div. Shifts Two

SYRACUSE, N. Y. — States D. Tompkins and Leeds Mitchell, Jr., specialists in foil cartons and laminated materials, have been transferred by the United Board & Carton Corp. to the company's New York and Chicago sales offices.

Mallory to Thomson

NEW YORK—Edward B. Mallory has been appointed director of sales for the Thomson Paper Mills, Inc. He was formerly regional director of sales for the Marcal Paper Products Co. and before that was with Scott Paper Co.

Expanding Coos Bay Offices

ANACORTES, Wash. — Plans by the Coos Bay Pulp Corp. to enlarge the present office at 17th and R avenue were revealed in a building permit filed here. Estimated cost is $4,000.

Damp Joins Flambeau

PARK FALLS, Wis.—Fred C. Dimp has been named mill superintendent of the Flambeau Paper Co. He was formerly general superintendent of the Ward Paper Co., Merrill, Wis.

Named Alford Executives

RIDGEFIELD PARK, N. J.—Edward T. Torpey has been named vice-president and Frank C. Williams, sales manager for the Alford Cartons Division of the Continental Paper Co.

Union City, N. J., Lease

UNION CITY, N.J.—The Bergen Paper Converting Corp., has leased quarters at 522-24 Thirty-Second street for assembling aluminum foil products.

Long to Rutledge

MENTER, Ohio—Lloyd W. Long has joined the Rutledge Paper Products Co., as traffic manager. Previously he was with Bridgeways, Inc., Kalamazoo, Mich.

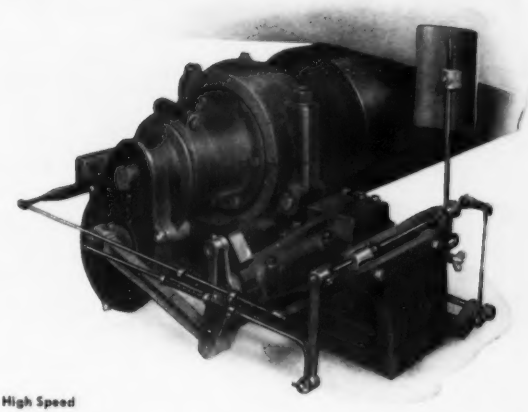
Lake to Gilman

NEW YORK — Homer M. Lake has joined the staff of the Gilman Paper Co.

MOORE & WHITE Wire and Felt Guides are fully automatic —adjustable to variations in the width of the wire and felt. The single fender arrangement assures lighter contact with the wire or felt, thus less wear, longer life, and the resulting economies in material costs and time.

These Guides are adjustable to suit the speed of any machine and any size of journal. Gear-reduction can be arranged for high-speed machines. Guides are built in two sizes: A—for machines up to 120 inches; B—for larger machines. Your present ball bearings can be used in most cases.

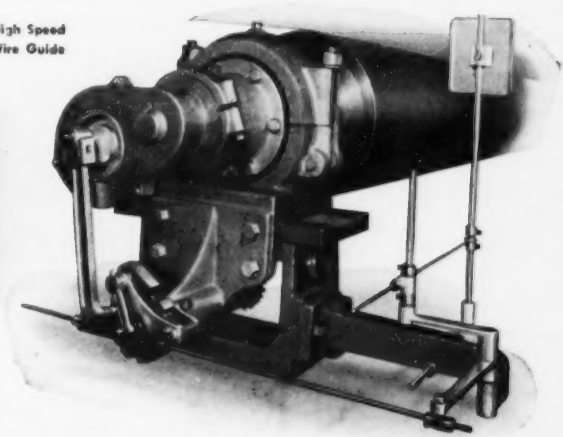
Protect your costly Fourdrinier wires and your felts from needless wear . . . eliminate unnecessary down time. Write or call today for full information on Moore & White Wire and Felt Guides.



High Speed Felt Guide

Today's MOORE & WHITE Automatic WIRE and FELT GUIDES are foolproof!

High Speed Wire Guide



The MOORE & WHITE Company

15TH STREET AND LEHIGH AVENUE
PHILADELPHIA 32, PA.

Custom-Built Machines for Makers of Paper and Paperboard

Ireland

DUBLIN—In 1948, Eire imported paper and cardboard to a total value of £3,365,216 as against £3,853,284 in 1947 These imports included 10,279 tons of paper making materials, valued at £295,580 in 1948 and 18,502 tons, valued at £508,835 in 1947.

Imports of coated printing paper during 1948 amounted to 12,691 cwts. valued at £77,506, the figures for 1947 being 20,860 cwts., valued at £98,327. Newsprint imports in 1948 were 282,460 cwts., valued at £559,615 as against 322,654 cwts., valued at £548,094 in 1947, and of other uncoated printing papers, 55,683 cwts., valued at £258,743 as against 77,066 cwts., valued at £333,783 in 1947.

Imports of writing paper in large sheets were 13,293 cwts., valued at £62,925 in 1948, and 28,518 cwts., valued at £115,613 in 1947.

The largest single import in the paper and cardboard group in 1948 was 340,908 cwts., of cardboard etc., in the piece, valued at £819,369 against 325,655 cwts., valued at £792,409 in 1947.

In 1948, £5,623 worth of paper and cardboard, etc., were re-exported from Eire, the value for 1947, being £2,231.

* * *

It is proposed to commence work on specifications for paper-bags, wallpaper and packaging paper at an up-to-date laboratory costing £30,000 now being built in Dublin and expected to be completed at the end of the year. The laboratory will be staffed by chemists, physicists, and technicians belonging to the Institute for Industrial Research and Standards, whose work is to discover technical processes and methods to promote or facilitate expansion of existing indurtries, and develop new ones. Also to discover new uses for waste products.

The laboratory will be an integral part of the future administrative premises of the Institute and will be staffed by about 12 to 14 persons. Testing and proof houses will probably be added later.

since the Institute was set up in 1946 it has been experiencing difficulties in recruiting a staff, and its work was hampered because of inadequate laboratory facilities. Although a small temporary laboratory is functioning at the moment, most of the research already completed has had to be carried out in the different Universities.

AMERICAN PAPER AND PULP ASSOCIATION'S PRODUCTION RATIO REPORT*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1949		Corresponding Weeks—1948	
January 22	95.3	January 24	101.1
January 29	94.8	January 31	103.6
February 5	93.8	February 7	99.2
February 12	94.2	February 14	100.5
February 19 (Revised)	93.7	February 21	99.4
February 26	**91.7	February 28	**102.1

** Capacity in Tons—181,813. ** Capacity in Tons—172,250.

COMPARATIVE MONTHLY SUMMARIES

1948		May	100.5	Oct.	99.1	1949	
Jan.	100.1	June	95.7	Nov.	97.1	Jan.	290.6
Feb.	99.8	July	83.3	Dec.	‡87.1	Feb.	293.4
Mar.	100.8	Aug.	96.8				
Apr.	100.8	Sept.	91.8	Year Avg.	296.3		

‡ Preliminary Ratios.

COMPARATIVE YEARLY SUMMARIES

	1942	1943	1944	1945	1946	1947	1948	1949
Year to Date	104.0	88.2	88.4	87.9	95.2	104.6	100.6	94.2
Year Average	90.4	87.8	88.1	89.4	101.1	104.3	96.3	

PAPERBOARD OPERATING RATIOS†

Current Weeks—1949		Corresponding Weeks—1948	
January 22	92	January 24	104
January 29	88	January 31	103
February 5	87	February 7	100
February 12	86	February 14	101
February 19	86	February 21	99
February 26	80	February 28	101

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1948	99	100	102	102	100	94	81	92	91	96	94	84	95
1949	88	85											

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

Magnus with Moraine

WEST CARROLLTON, Ohio—Carl Magnus has been named superintendent of paper mill operations of the Moraine Paper Co. (subsidiary of American Envelope Co.). This appointment became effective on February 7, 1949.

St. Regis Vet. Quartet

HARRISVILLE, N. Y.—Welcome Weaver, Allen Brady, Thomas Hickey and George McCauley, veteran employes of the local St. Regis Paper Co. mill who have reached the age of 70 years and been retired on pensions were recently presented with sheepskin-lined leather jackets by the former fellow-employes.

Racquette's Smith Retires

POTSDAM, N. Y.—Thomas H. Smith, has retired as foreman in the finishing room of the Racquette River Paper Co., after 47 years of continuous service.

Winslow Leaves Eddy Co.

OTTAWA — E. B. Eddy Co., paper manufacturer, announce the retirement of George C. Winslow as director and director of sales for the company.

Semms Ass'n., President

RACINE, Wis.—David Semms of the Addison & Semms Co., has been elected president of the Racine Ass'n., of Commerce.

MEISEL MACHINERY IS HELPING IN ALL FIELDS

Cigarette Wax Photographic Jet Propulsion

Condenser Grease Proof Snap-out Forms Aero-engine Parts

MEISEL PRESS MFG. CO. 950 Dorchester Ave., Boston

Supplying Your Requirements

AMERICA'S LEADING INDEPENDENT WASTE PAPER PACKERS

WASHINGTON, D. C.
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NEW YORK, N. Y.

THOMAS PAPER STOCK COMPANY
860 W. Evergreen Avenue • Chicago 22, Ill.

Price & Pierce ltd
Pulp & Paper
agents
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WEST VIRGINIA PULP and PAPER COMPANY

230 Park Ave.
New York 17, N. Y.

35 East Wacker Drive
Chicago 1, Ill.

Public Ledger Building
Philadelphia 6, Pa.

503 Market St.
San Francisco 5, Calif.

Manufacturers of West Virginia Mill Brand Papers

SUPERCALENDERED	ENVELOPE
ENGLISH FINISH	MIMEOGRAPH
LITHOGRAPH	INDEX BRISTOL
LABEL	POST CARD
OFFSET	COVER
EGGSHELL	CUP AND CONTAINER
MUSIC	FILE FOLDER
POSTER	TAG
BOND	COATED
WRITING	MACHINE COATED

KRAFT CONVERTING AND KRAFT ENVELOPE
KRAFT LINER BOARD

MILLS

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Charleston, South Carolina

EXCELSIOR KNOX Woolen Co. Camden Me. FELTS & JACKETS

"EXCELSIOR" FELTS

Manufacturers of Felts of Superior Quality
for Every Grade of Pulp and Paper

KNOX WOOLEN COMPANY
CAMDEN, MAINE

CLEARING HOUSE

HELP WANTED

MEN WANTED
Positions Open

Manager for large mills making newsprint, paper board, tissue and specialty papers; superintendents assistant superintendents, foremen and color mixers for laminating and coating plants; technical superintendent; night superintendent strong on colors, beaters and machines.

Chemists and chemical engineers, one with Ph.D. degree; laboratory assistants; assistant chief power engineer; cylinder machine tenders; beater engineers.

We invite correspondence (confidential) with mills seeking executives and with executives seeking new positions.

CHARLES P. RAYMOND SERVICE, INC.
294 Washington St., Boston, Mass.
M-10

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (39 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, INC.
117 Dun Bldg., Buffalo 2, N. Y.
TF

WANTED
PAPER RESEARCH CHEMIST

to supervise group of 6 to 8 men on development of paper products in research laboratory of upper midwest manufacturer of bleached groundwood, sulphite and kraft printing and converting papers. Must be well grounded in paper chemistry and manufacturing processes with development experience in these fields. Prefer men 30 to 40 years old with a good knowledge of book grade bleached papers and enamel grade coated papers. In reply give personal history, training, experience and salary expected.

Address Box 49-52, care Paper Trade Journal. TF

PRODUCTION MAN PACKAGED GOODS

Excellent opportunity for man experienced in factory production of nationally advertised packaged consumer products. Will assist factory manager in installing and supervising quality controls and cost saving methods in production of packaged paper products. Actual paper experience not essential. Write full details concerning experience and compensation desired. Box 49-138, care of Paper Trade Journal. M-10

HELP WANTED

MACHINERY SALES ENGINEER

Exceptional opportunity for man, aged 30 to 38, to represent leading builder of pulp and paper machinery in East or in Mid-West. Salary and expenses, with excellent prospects of advancement for man who combines mechanical sense with selling ability. Write, giving full details as to qualifications, training and experience. Our organization knows about this advertisement. Address Box 49-122 care Paper Trade Journal. M-24

PAPER CONCERN of long established reputation in sales of Newsprint, Groundwood Specialties, and Chemical Pulp, East of Mississippi River, is looking for an experienced salesman. Man we want must understand thoroughly groundwood specialties and be well known in this field. Any mill connections which he might have would increase his value to us. Salary comparable to position. Write details, experience and qualifications to Box 49-136, care Paper Trade Journal. All replies kept in strict confidence. M-17

WANTED: Tour Boss experienced in cylinder machine operation capable of maintaining production and quality on better grades folding boxboard. Excellent opportunity for the right man. Give full details in your reply. Box 49-135 care Paper Trade Journal. M-24

Leading manufacturer of machinery for the paper and textile industries desires a high grade engineering graduate to supervise sales and promotion of new products. The man we want is already engaged in this field of work. Send photograph and full details of experience. Please address all your replies to P. O. Box 748, New Brunswick, N. J. TF

PRESSMAN—Experienced on rotary multi color presses, coffee bag experience preferred but not essential, excellent opportunity for person with right qualifications, state full details. AMERICAN BAG AND PAPER CORP., Water & South Sts., Philadelphia, Pa. M-10

HELP WANTED

SALESMAN WANTED—Responsible manufacturer representatives in Chicago and in New York to handle specialty line for candy manufacturers. Address Box 49-82 care Paper Trade Journal. M-10

CHIEF CHEMIST WANTED for a board specialty mill. Address Box 49-84 care Paper Trade Journal. M-24

WANTED—Southern Paper Box Manufacturer desires Staude Master Operator, at least one year's experience. Good opportunity for advancement to Foreman. Address Box 49-124 care Paper Trade Journal. M-10

WANTED—TOUR BOSS. Large Writing Paper Mill. Must be familiar with sulphite and rag writing papers. The mill is located outside of Philadelphia. Address Box 49-125 care Paper Trade Journal. A-7

WANTED—Competent, honest man to SUPERVISE CONVERTING PLANT, manufacturing toilet tissues, napkins and towels. State previous experience. Address Box 49-126 care Paper Trade Journal. M-17

PLANT MANAGER—Must have production and sales experience. Position located in middlewest. Paper converting plant. State experience, history of employment and salary expected. Address Box 49-130 care Paper Trade Journal. M-24

SITUATIONS WANTED

TECHNICAL DIRECTOR—CHEMICAL ENGINEER—Under forty, TAPPI member, 15 years experience—kraft, sulphite pulping, diversified papers, paperboard, stock preparation, bleaching. Employed but wants better opportunity, any location. Thrives on responsibility. Invites confidential correspondence. Address Box 49-112 care Paper Trade ournal. M-17

EXPANSION IN 1949?

EXECUTIVE ASST., EXPORT MAN, familiar with both U. S. and Latin American industrial procedure and distribution through long residence in Argentine and West Coast South America. Fluent Spanish, proven sales ability, able to invest small capital, desires connection with progressive company. Location unimportant. Box 49-129, care Paper Trade Journal, New York. M-10

RESEARCH DIRECTOR AND CHIEF CHEMIST—with a large paperboard and specialty mill for 12 years, many successful developments, finds change necessary. Health and appearance good, married, with family, desire permanent position with well established company. Expect salary to start less than now received. Address Box 49-133, care Paper Trade Journal. A-7

RATES FOR CLASSIFIED ADVERTISING

HELP WANTED—10c a word. Double rate for heavy face type. Minimum charge $2.50.

SITUATIONS WANTED—10c a word, double rate for heavy face type. Minimum charge $2.50. If repeated ½ rate will be charged for each consecutive repetition.

FOR SALE—10c a word. Double rate for heavy face type. Minimum charge $2.50.

WANTED—10c a word. Double rate for heavy face type. Minimum charge $2.50.

OPPORTUNITIES—10c a word. Double rate for heavy face type. Minimum charge $2.50.

Classified advertising space may also be purchased at $5.00 per single column inch. All classified advertisements are payable in advance. If box number is used—70 cents additional.

Address replies to advertisements appearing under Box Numbers in care of PAPER TRADE JOURNAL, 15 West 47th Street, New York 19, N. Y.

SPECIALIZATION

It takes a special brand of skill to bring a "gem of purest ray serene" up from the "dark uncharted caverns" of ocean floor. *Specialization.*

It takes a special brand of skill to weigh a papermaker's problem, conceive the solution and translate that solution into iron and steel. *Again, it's specialization.*

For seventy-six years Black-Clawson has been specializing—studying the techniques of papermaking, developing equipment better to serve the industry.

CYLINDER MACHINES AND FOURDRINIERS. All sizes, all speeds. Latest features, including "HYDRONAMIC" Inlets.
DRIVES, CALENDERS, REELS, WINDERS, CUTTERS.

THE BLACK-CLAWSON CO., HAMILTON, OHIO

DIVISIONS:

SHARTLE BROS. MACHINE COMPANY, MIDDLETOWN, OHIO — DILTS MACHINE WORKS, FULTON, NEW YORK

B-C INTERNATIONAL, LTD., 16 Catherine Place, Victoria, London S-W-1, England

Western Sales Office: Mayer Bldg., Portland, Oregon — Associate: ALEXANDER FLECK LIMITED, Ottawa, Canada

Black-Clawson

FOR SALE

BEATERS
1—Iron tub 84x84 Shartle breaker
1—Ditts high speed with roll 56x48

CUTTERS
1—136" Horne duplex with duplex layboy
1—100" Hamblet duplex with duplex layboy
1— 94" Clark single with layboy
1— 84" Clark single with layboy
1— 76" Clark
2— 48" Hamblet

DRYERS

1—12 ft. x 186" Yankee	4—48 x 118"
1—12 ft. x 138" Yankee	2—48 x 106"
2— 8 ft. x 174" Yankee	1—48 x 80"
3— 5 ft. x 174"	16—36 x 65"

FOURDRINIER PARTS
1—Wire 50' x 110" anti friction with 18" suction couch and three sets presses, rolls 20 x 100".
1—100" Fourdrinier Part with 30" suction couch, 20" diameter breast roll, 8" diameter table rolls.

JORDANS
1—No. 2 Appleton, anti friction, with 150 HP motor
1—No. 3 Miami, anti friction
1—No. 2 Dillon
3—Noble & Wood Pony

MOULDS
1—36 x 125"
1—60 x 84"
1—48 x 84"
1—84 x 84"

PAPER MACHINE
1—100" trim combination machine
1—94" trim facial tissue and M G machine with 8" dia. Beloit dryer
1—84" Fourdrinier paper machine

PUMPS
2—12 x 12 Gould triplex
1—10 x 20 Shartle duplex
1— 7 x 10 Gould triplex

SCREENS
2—No. 3 Bird
Flat screens, 3 to 16 plate
Leith Walk and Moore & White rotary

SLITTERS
1—234" Rice Barton
1—130" Moore & White four drum
1—150" Warren two drum
1—136" and one 129" Pusey & Jones two drum
1—112" Kidder
1— 62" Langston
1— 56" Cameron
1— 92" 44 W Cameron

SUCTION ROLLS
1—30 x 180" Couch
1—62 x 180" Press
1—22 x 166" Couch
1—18 x 148" Couch
1—18 x 92" Couch

ELECTRIC TRUCKS
1—Baker electric truck, model D T D
1—Walker electric highway truck, 4000 lb. Capacity, Model 42 with generator
1—Automatic tractor and pilot

FRANK H. DAVIS CO. 175 Richdale Ave., Cambridge, Mass. TF

SITUATIONS WANTED

PAPER MILL SUPPLY & Equipment Salesman. Will represent manufacturer selling to mills in Pennsylvania, New York and New England. Well known in the trade. Commission or salary. Best of references. Reply to Box 49-81 care Paper Trade Journal. M-10

WELL KNOWN experienced Paper and Paper Supply Salesman desires to make permanent connections with Mill or Manufacturer in the Southern California or Pacific Coast Area. Address Box 49-117 care Paper Trade Journal. M-10

BEATER ENGINEER—wants position after April 1st. Married, temperate habits. Accustomed to all grades rag or wood. Address Box 49-118 care Paper Trade Journal. A-7

PRODUCTION MANAGER or SUPERINTENDENT—Can duplicate or develop new grades of cylinder products on a successful commercial basis. Possess a technical as well as a practical background. Address Box 49-111 care Paper Trade Journal. M-10

POSITION WANTED — SUPERINTENDENT. Thorough experience in the operation of Cylinder Machines making high grade folding specialties. Excellent production, maintenance and labor relations background. Desires position with progressive concern. Address Box 49-132 care Paper Trade Journal. M-17

FOR SALE

TUBE & CORE MACHINERY FOR SALE BARGAINS

1—Largston Single Belt Spiral Paper Tube Winder & Cut-Off saw, one glue pot, suitable for toilet cores and other uses $2000.00

1—38" Board Slitter & Rewinder Shear Cut $1250.00

1—Knowlton S. B. Winder complete 2 glue pots $2750.00
Extra glue pots, etc. etc.

Many other items Tube Machinery

THEO. ADAMS
111 W. Washington St., Chicago, Ill.
R.A. 6-3558
M-10

FOR SALE

2—Nash L-9 Vacuum Pumps, used few months. Address Box 49-115 care Paper Trade Journal. M-10

FOR SALE

CALENDER STACKS—1—106" wide, 9 rolls. Beloit.
1—82" 5 roll.
1—124", 8 rolls, all rolls ground flat, work newly done.
1—114", 7 rolls.

GEARS—12—for 48" dryers, 113 teeth, 54" P.D., 4" face, 7" bore.
14—gears—36" dryers, 108T, 1¼"P, 35⅝"F, 43¼" P.D., 7⅛" B.

NEW BELTING
280", 8", 4 ply Goodrich Highflex Rubber belt.
490", 12", 7 ply, Goodrich Highflex Rubber belt.
553", 8", 4 ply, Silver Duck Transmission belt.
432", 10", 6 ply Silver Duck Transmission belt.
260", 10", 6 ply Silver Duck Transmission belt.

PHOSPHOR BRONZE WIRE CLOTH, 7 pieces new, 30 mesh plain weave, 87" x 95".

Norton Wheels, 106, 4" x ½", x ⅝".

984 lbs. Crystal Violet.

PUMPS—1—7 x 16 Shartle Triplex Pump, new in 1937.
1—Goulds Centrifugal Stock Pump, 8" x 12", Type 3105, anti-friction bearings.
1—Lawrence Fan Pump, 4" x 6", belt driven.
1—Lawrence Fan Pump, 8" x 10", belt driven.
New bronze plunger pump bolts and seats. New bronze cylinder machines, Beloit and Shartle plunger pumps.

REDUCTION GEARS—Right Angle.
1—Foote Bros., Type SW, 60:1 ratio.
2—Foote Bros., Type 15W, 48:1 ratio.
1—Cleveland Worm and Gear, Size 50-RH, Series 25, 60:1 ratio.
2—WA Jones Foundry and Machine Co., 1 H.P. Driving shaft, 900 rpm, 40:1 ratio.
1—Caldwell Worm Drive, 3 HP, 12.666:1 ratio, 114 rpm low speed shaft.
3—Boston Reducers, 48:1 ratio, ¾" input, 1" output shafts.
1—Barrett Lift Truck, 4000 lbs. Hydraulic hand lift. Electrically driven.

SURPLUS SUPPLIES
2—Wet machines, 84" and 96". Anti-friction couch.
VOITH INLETS—1—119½" Voith High Pressure Stock Inlet. Complete. Rubber-lined mixing tank.
1—82" Voith Inlet with perforated roll.
1—25" Sandusky Suction Couch roll, 137" drilled face.
1—22" Sandusky Suction Press Shell, 138" drilled face.
1—14.9" x 81" drilled face suction couch roll complete.
1—19½" x 94" Suction Press Shell, rubber covered, with suction box.
1—104" Beloit Duplex Cutter with Reeves drives on knives.
1—Mammoth Jordan, direct connected.
1—Majestic Jordan with 250 HP slipring motor A.C., and drum controllers.
1—Carload soapstone, 12" x 12" x 18".
1—Carload soapstone, 12" x 18", x (8" x 5¼") wedge.
1—20th Century Seybold Trimmer, 65" with motor.

PAPER MILL STORES
P.O. BOX 40, LOCKPORT, N. Y.
M-10

CHESTNUT WET LAP FOR SALE

8 Air Dry Tons per day of pure chestnut wet lap available for immediate shipment. Write for details and sample.

CHAS. A. SCHIEREN COMPANY
Bristol, Va. TF

FOR SALE—Coal, West Virginia or Pennsylvania Nut Slack, Mine Run. That better coal you have been looking for. Carlead Coal Corp., 55 W. 42nd St., New York, N. Y. M-10

COMPLETE BAG PLANT
To be Sacrificed

15 Machines . . all recently overhauled . . equipped with motors . . ready to operate. We purchased these used machines only short time ago and have just finished reconditioning in our own machine shop. Rapid expansion in other divisions of our business has prevented our promotion of this department.

Following is partial list of bags handled on these machines:

Grocery (SOS)	Automatic
Notion	Liquor
Millinery	Candy
Glassine	Bakery

$5000 will handle with balance in small installments over several years.

New machines with comparable capacity would require many times this investment.

This is that opportunity of a lifetime for some alert person to open complete bag factory in an expanding market.

Can be inspected by appointment.

If you are genuinely interested write for specifications.

Address Box 49-123 care Paper Trade Journal. M-17

FOR SALE: N. J. Mounting Machines Models 57 & 58. 44" & 65" Paper Power Cutters; Fuchs & Lang 40" Coater; Beck Sheeters 36" & 55"; No. 3 Miehle 33x46; 22x39 & 70x78 Sheridan Die Cutters; 30" & 40" Slitters & Rewinders; 14x22, 20x30, 26x38 Thomson Die Cutters; No. 10 Babcock Die Cutters 55". Also complete Mounting & Finishing Division with machines like new. Write for listing and prices on these and other Paper Box and Paper Converting Machines. Selling out on pre-moving sale. Address Box 49-121 care Paper Trade Journal. A-28

FOR SALE — One Corley-Miller cellophane wrapping machine — Model MPUS. Special 15½" length capacity. Complete with sheeter, conveyor, electric eye. 110V.—60CY—S.P. Motor. Write Box Number 49-134 care Paper Trade Journal. M-10

FOR SALE—Junior Automatic Toilet Roll Wrapping Machine. Roll wrapper feed. Originally built for cellophane or acetate. Manual registry. (Electric eye can be added). Demonstration by appointment. Immediate delivery. Special price. Address Box 49-83 care Paper Trade Journal. M-10

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1—102" Cameron Type 18—60" diameter rewind capacity.

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1—5' Carthage Disc Barker

BEATERS
3—1000 lb. Dilts Beaters—Iron Tub.
1—800 lb. Beater—iron tub.

BRASS FELT ROLLS
9—4" diameter x 140" face (with bearings).

BREAST ROLLS
1—100" x 14".
1—114" x 14".
1—120" x 14".

CALENDER STACK
1—72" 5 roll Calendar Stack.

CRUSHERS
1—18" x 18" Jeffrey Single Roll Crusher

CYLINDER MOULDS
1—36" diameter x 80" face.
1—30" diameter x 72" face.
1—36" diameter x 79" face.

DECKER
1—Decker—48" diameter x 84" cylinder mold (New).

DRIVES
2—#4 Reeves Drives.
1—#2 Reeves Drive.
1—Smith & Winchester mortise gear Drive.
1—D. O. James 75 H.P. Speed Reducer with couplings and motor base. Ratio 2:16 to 1. 900 RPM.
1—Foote—7½ h.p. Speed Reducer (Ratio 240 to 1)
2—Smith & Winchester Mortise Gear Drives with 26" diameter clutches—Ratio 8 to 1.

DRIVES (Angle)
1—General Machine Company 16 : 1.
1—Philadelphia 50:1 — 1 h.p. — 1200 r.p.m.
2—Philadelphia 21½:1 — 3 h.p. — 1200 r.p.m.

V-BELT DRIVE
1—81½" diameter x 7½" face, 5 groove.
1—16½" diameter x 7¼" face, 5 groove. (With clutch).

DRYERS
9—36" diameter x 76" face.
1—48" diameter x 81" face.
1—48" diameter x 94" face.
5—25" x 120"(Baby Dryers)
2—36" x 143".
1—24" x 130"

FLAT SCREENS
2—12 Plate Murray Dunbar Flat Screens.
1—8 plate Packer Type Flat Screen.
1—6 plate Shartle Flat Screen.

HYDRAULIC PRESS
1—Watson-Stillman Co. (Platen 24" x 24").

JORDANS
1—Noble & Wood, Pony Monarch, Belt Driven.
2—Noble and Wood—Mammoth Type.

MISCELLANEOUS
1—Caustic Mixer.

MOTORS
2—5 h.p. ball bearing—splash proof motors —3/60/440. 1160 r.p.m.
1—½ h.p. ball bearing—splash proof gear-head motor—3/60/440. 1725 r.p.m.
1—2 h.p. ball bearing—splash proof gearhead motor—3/60/440. 1725 r.p.m.

PRESS ROLLS
Various sizes.

PULLEYS
Various cone and assorted pulleys.

PULP STACKER
1—Link Belt Company Pulp Stacker, 30 ft. conveyor, 2½ ft. wide, self propelled, with motors.

PULPER
1—Jones Pulper. Complete with motor and drive.

PUMPS
2—Weil Pump Co.—100 g.p.m.—100 P.S.I. including 15 h.p. motors (new equipment).
1—Bell & Gossett—300 g.p.m.—120' head—including 15 h.p. motor.
1—Goulds Sump Pump—50 g.p.m.—20' head —including motor.
Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

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1—72" Beloit Reel.

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500—Brass tube-steel tube—rubber covered iron rolls—various sizes.

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1—#5 Bird Saveall.

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20 Plates cut .016.
10 Plates cut .008.
Also other sizes and cuts in stock.

SHEETER
1—136" Moore & White Sheeter, duplex, with layboy.

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1—102" Cameron—Type 18.
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1—62" Cameron—Type 10-10-AJ.
1—50" Cameron—Type 24-2L.
1—42" Cameron—Type 40-4-B.
1—42" Cameron—Type 28-8-7 (shear cut).
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1—42" Cameron—Type 9-5.
1—42" Cameron—Type 6.
1—42" Cameron Constant Tension, with pneumatic control.
1—30" Langston.

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2—Rubber Squeeze Rolls, 20¾" diameter x 102" face.

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1—Sandusky 14⅞" diameter x 103" drilled face.
1—Sandusky 22" diameter x 119" drilled face.

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1—Downingtown Suction Press Roll 16" diameter x 66" drilled face.

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1—#4 Nash Hytor Vacuum Pump.
1—Sandusky 8 x 10.

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1—62" Mayer Waxing Machine.

YANKEE DRYERS
1—8' diameter x 175" face.

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3—Telhurst 40" suspended baskets. Complete units with push-button starters, 440 volt motors. CI frame-work.
2—Dryers, 42 x 100, used one year. 100 lb. steam pressure. CI.
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1—10 x 20 Beloit Plunger Pump, Triplex, New in 1941.
34 Dryers, 48 x 126, with rope sheaves, bearings, packing glands, M & W.
2—Bird Tailing Screens, 6 plate, with scrapers and 22 plates. 1—4 plate also.

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Roll Pasting Equipment for 62" machine, including paste mixing tanks, pump, applicator laminating rolls, dryers, gears, steam joints, etc. For further information, write to Box 49-128, Paper Trade Journal. A-7

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3" and 4" New Steel Pipe cut to length and slotted per specification.

ALTOONA PIPE & STEEL SUPPLY CO.
Altoona, Pennsylvania
Phone 6151 TF

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Paper Mill making light weight M. G. Sulphite and specialties. Conveniently located to Eastern markets by overnight truck deliveries. Write Box 49-127 c/o Paper Trade Journal. M-17

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Slitter, standard make, to handle paper 62" wide at 750 to 1000 feet per minute. Must be in first class working condition. Give full particulars and price. Reply to Box 49-119, Paper Trade Journal. M-24

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One Dryer approximately 8' dia. by 74" face. Address Box 49-114 care Paper Trade Journal. M-10

WANTED—W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic presses, Sheridan Presses, Dryers. Address Box 48-223 care Paper Trade Journal. TF

WANTED—Brightwood Box Machine. Address Box 48-224 care Paper Trade Journal. TF

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WANTED—Cut-off Knife 102" or wider for board pasting machine. Address Box 49-105 care Paper Trade Journal. M-17

WANTED—Used English or Pope Type Reel, 86" to 110" face in good condition. Address Box 49-139 care Paper Trade Journal. M-17

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WELL KNOWN BRITISH COMPANY manufacturing paper mill plant, invites suggestions from patentees or manufacturers of new equipment or processes. Complete technical and sales staff. All replies treated with strict confidence. Address Box 49-75 care Paper Trade Journal. M-10

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BRIEF SUMMARY OF CONTENTS

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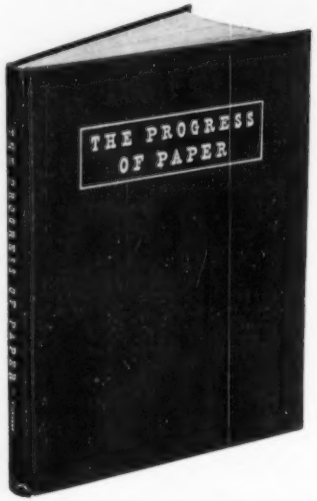
The Progress of Paper

Papyrus to Parchment to Paper
2000 B.C. to 1947 A.D.



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Cores
Elixman Paper Co.
Hubbard Spool Co.
Rodney Hunt Machine Co.
Smith & Winchester Mfg. Co.
Sonoco Products Co.
Walker-Goulard-Plehn Co.

Couplings
Black-Clawson Company
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John

Cranes
Cleveland Crane & Engrg. Co.
Industrial Brownhoist Corp.
Link Belt Company
Whiting Corp.

Cup and Container Machines
Mercury Engrg. Corp.

Cutters
Dilts Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Moore & White Co.
Perkins & Son, Inc., B. F.
The Smith & Winchester Mfg Co.
Taylor Stiles & Co.

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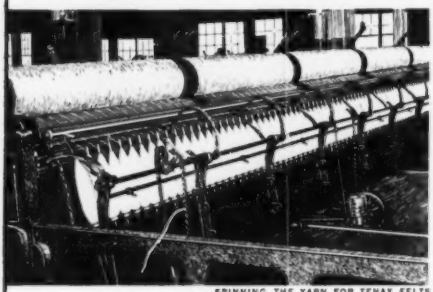

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M. W. Jenkins Sons, Inc.
National Tube Co.

Dampeners
Perkins & Son, Inc., B. F.
Raybestos-Manhattan Inc., Manhattan Rubber Division
Valley Iron Works Co.

Deasphalting Chemicals
Adell Chemical Company

Deckle Straps
Stowe Woodward, Inc.

Deckle Webbing
Williams-Gray Co.

De-Inking
Adell Chemical Company
Buffalo Electro-Chemical Co., Inc.
Dilts Machine Works
General Dyestuff Corp.
Kinsley Chemical Co.
Roderick O'Donoghue
Shartle Brothers Machine Co

Deinking Chemicals
Adell Chemical Company
E. I. Du Pont De Nemours & Co., Inc., Pigments Dept.
General Dyestuff Corp.
Kinsley Chemical Co.
Monsanto Chemical Company
Philadelphia Quartz Co.

Densometers
W. & L. E. Gurley

Design Construction
Ebasco Services

Detergents
Adell Chemical Company
Calgon, Inc.
Cowles Chemical Co.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Philadelphia Quartz Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

Dewaxing Chemicals
Adell Chemical Company
General Dyestuff Corp.
Nopco Chemical Co.

Digesters
Babcock & Wilcox Co.
The Biggs Boiler Works Co.
Combustion Engrg. Co., Inc.
Foster Wheeler Corp.
General American Trans. Corp.
Lukenweld
Pusey & Jones Corp.

Dirtee
Bird Machine Co.

Dispersing Agents
Adell Chemical Company
Calgon, Inc.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.

Doctors
Bird Machine Company
Black-Clawson Company
Downingtown Mfg. Co.
Lobdell Co.
Lodding Engineering Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

Doctor Blades
Bird Machine Company
Black-Clawson Company
Lodding Engrg. Corp.
Raybestos-Manhattan Inc., Manhattan Rubber Division
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

Driers
Black-Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Hardinge Company, Inc.
Lukenweld
The Moore & White Co.
Murray Mfg. Co., D. J.
J. J. Ross Company
Red-Ray Mfg. Co., Inc.
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
The Youngstown Welding & Engrg. Co.

Where

Drives
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Bird Machine Co.
Black-Clawson Company
Chain Belt Company
Davis, Frank H., Co.
Dilts Machine Works
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Farrel-Birmingham Co.
General Electric Company
Gibbs-Brower Company, Inc.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Syco Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp

Dryer Drainage
Stickle Steam Specialties Co.

Dusters
Appleton Machine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co
M. W. Jenkins Sons, Inc.
E. D. Jones & Son Co.
Moore & White Co.
D. J. Murray Mfg. Co
John Waldron Corp.

Dusting Brushes
M. W. Jenkins Sons, Inc.

Dyestuffs
American Cyanamid Company, Calco Chemical Div.
Ciba Company
E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The
General Dyestuffs Corp.
National Aniline Division, Allied Chemical & Dye Corp.
C. K. Williams & Co.
Witco Chemical Co.

Embossing Rolls
The Appleton Machine Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Midvale Company
Northern Engraving & Mch. Co.
B. F. Perkins & Son, Inc.
John Waldron Corp.

Emulsifiers
Adell Chemical Company
General Dyestuff Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

Enzymes
Rohm & Haas Co.

Evaporators
Foster Wheeler Corp.
General American Transportation Corp.
Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.

Expanders
Mount Hope Machinery Co.

Fans
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

Feeders
Hardinge Company, Inc.
Merrick Scale Mfg. Co.
Leeds & Northrup

Felts
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Bulkley, Dunton Pulp Co., Inc.
Draper Bros. Corp.
Huyck & Son, F. C.
Lockport Felt Co.
Mt. Vernon-Woodbury Mills Inc.
Morey Paper Mill Supply Co
Orr Felt & Blanket Co.
Shuler & Benninghoten
Waterbury Felt Co.
Waterbury, H., & Sons Co
Williams-Gray Co.

To Buy

Felt Cleaners
Adell Chemical Company
Calgon, Inc.
Cowles Chemical Co.
General Dyestuff Corp.
Nopco Chemical Co.

Felt Conditioners
Bird Machine Co.

Felt Guides
Black-Clawson Co.
Frank W. Egan & Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

Fillers
American Cyanamid Company, Industrial Chemicals Division
Johns-Manville Sales Corp.
W. H. Loomis Talc Corp.
A. M. Meincke & Son, Inc.
Vanderbilt Co., R. T.
Witco Chemical Co.

Filters
R. P. Adams Co., Inc.
Bird Machine Company
Cochrane Corp.
General American Transportation Corp.
Hardinge Company, Inc.
Johnson Corp.
Moore & White Co.
J. O. Ross Engrg. Corp.
Witco Chemical Co.
Walworth Company

Fittings
Crane Company
Ladish Company
Phoenix Products Co.
Walworth Company

Flexible Couplings
Ajax Flexible Coupling Co.

Flooring, Grating and Treads
The Goodyear Tire & Rubber Company
Norton Co.
Raybestos-Manhattan Inc. Manhattan Rubber Division

Flow Boxes, Stainless-Clad
Lukens Steel Co.

Forming Machines
Black-Clawson Co.
Downingtown Mfg. Co.
The Moore & White Co.
Noble & Wood Machine Co.
Oliver United Filters, Inc.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

Friction Materials
Johns-Manville Sales Corp.
Raybestos-Manhattan Inc., Manhattan Rubber Division

Freeness Testers
Testing Machines, Inc.

Gaskets
The Goodyear Tire & Rubber Company
Raybestos-Manhattan Inc., Manhattan Rubber Division

Gears
Black-Clawson Company
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co
Smith & Winchester Mfg. Co
Suburban Machine Co.
Valley Iron Works Co.
Waldron Corp., John
Westinghouse Electric Corp

Grinders
Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc
Lobdell Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

Grinding Wheels
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Norton Company

Guides, Web
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The Moore & White Co.
Mount Hope Machinery Co.
Bound Brook Engrg. Co.

Gums
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Stein-Hall Co., Inc.

Heads
Babcock & Wilcox Co.
Lukens Steel Company

Heat Exchangers and Recovery Systems
William Allen Son's Company
Foster Wheeler Corp.
Stickle Steam Specialties Co.
Westinghouse Electric Corp.

Heating, Ventilating & Air Conditioning
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Armstrong Machine Works
Cochrane Corp.
E. D. Jones & Sons Co.
General Electric Co.
Leeds & Northrup
Minneapolis-Honeywell Regulator Co.
D. J. Murray Mfg. Co.
Red-Ray Mfg. Co., Inc.
Ross Engineering Corp., J. O
Stickle Steam Specialties Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

Hoists
Appleton Machine Co.
Rodney Hunt Machine Co.
Ingersoll-Rand Co.
E. D. Jones & Sons Co.

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The Goodyear Tire & Rubber Company
Raybestos-Manhattan Inc., Manhattan Rubber Division

Impregnants
American Anode Div., The B F. Goodrich Chem. Co.

Industrial Tractors
Clark Equipt. Co., Clark Tractor Div.
Towmotor Corp.

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Gotham Ink & Color Co.

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Bauer Brothers Co.
N. P. Bowsher
The Bristol Company
The Brown Instrument Co.
Cochrane Corp.
The Foxboro Company
General Electric Company
W. & L. E. Gurley
Leeds & Northrup Company
National Technical Laboratories
B. F. Perkins & Son
Taylor Instrument Cos.
Testing Machines, Inc.
Williams Apparatus Co., Inc.

Joints
Johnson Corp.
Perfecting Service Corp.

Jordan Fillings
Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Shartle Brothers Machine Co
Smith & Winchester Mfg. Co
Valley Iron Works Co.

Knives
Black-Clawson Company
Dilts Machine Works, Inc
Hamblet Machine Co.
Heppenstall Company
E. D. Jones & Sons Co
The Moore & White Co.
Taylor Stiles & Co.
Valley Iron Works Co.

Knot Boring Machines
DeZurik Shower Company

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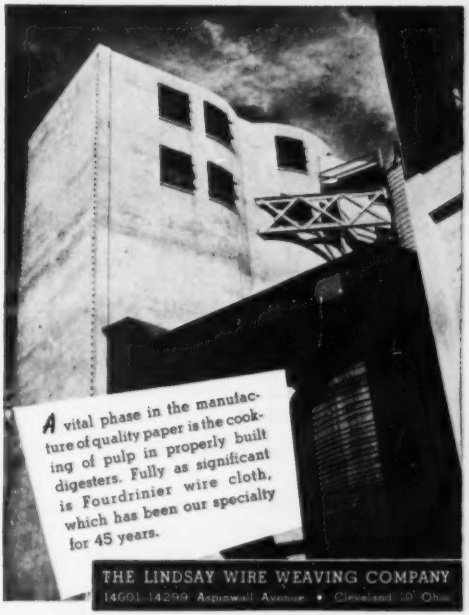
William Allen Son's Company
Appleton Machine Co.
Bauer Brothers Co.
The Biggs Boiler Works Co.
Bird Machine Company
Dilts Machine Works
W. & L. E. Gurley
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories
Taylor Instrument Companies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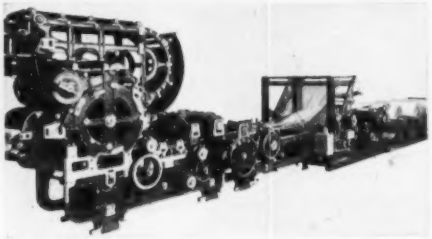

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Sun Oil Company
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The Wellman Engrg. Co.

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Lobdell Co.
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Stickle Steam Specialties Co.

Motors and Generators
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General Electric Company
Ingersoll-Rand Co.
Reliance Electric & Engrg. Co.

Nickel and Nickel Alloys
The International Nickel Co.

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Link Belt Company

Packing Boxes
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Perfecting Service Corp.
Shartle Brothers Machine Co.

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Paint
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Smith & Winchester Mfg. Co.

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Valley Iron Works Co.

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Hudson Sharp Machine Co.
Langston Co., Samuel M.
Suburban Machine Co.

Pasting Machines
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Dilts Machine Wks.
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Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John

Penstocks
The Biggs Boiler Works Co.

Perforated Metal
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Harrington & King Perforating Co.

Pipe
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Armco Drainage & Metal Products, Inc.
Babcock & Wilcox Co.
Crane Company
Johns-Manville Sales Corp.
Ladish Company
Michigan Pipe Co.
Michigan Steel Casting Co.
National Tube Co.
Stowe-Woodward, Inc.
Walworth Company
Youngstown Welding & Engrg. Co.

Pipe Fittings
American Cast Iron Pipe Co.
The American Rolling Mill Co.
Crane Company
Ladish Company
Michigan Steel Casting Co.
Phoenix Products Co.
Walworth Co.

Pitch Control
General Dyestuff Corp.
Monsanto Chemical Company
Rohm & Haas Co.

Platers
Gibbs-Brower Company, Inc.
Perkins & Son, Inc., B. F.

Plates
Armco Steel Corp.
Babcock & Wilcox Co.
The Biggs Boiler Works Co.
J. O. Ross Engrg. Corp.
Lukenweld
Lukens Steel Company
Timken Roller Bearing Co.

Plugs
The Appleton Machine Co.
Black-Clawson Company
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.

Precision Sample Cutter
Testing Machines, Inc.

Preservatives
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.

Pressure Vessels, Steel and Alloy
William Allen Son's Company
Babcock & Wilcox Co.
The Biggs Boiler Works Co.
Combustion Engrg. Co., Inc.
General American Transportation Corp.
Foster Wheeler Corp.
The Midvale Company

Presses
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Dietz Machine Works
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
The Moore & White Co.
Paper Converting Machine Co., Inc.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.
Waldron Corp., John H. G. Weber & Co., Inc.
Williams Apparatus Co.

Pulp Classifier
The Bauer Bros. Co.

Pulp Stock Valves
Crane Company
Record Fdy. & Mach. Co.
Shartle Bros. Mach. Co.

Pulpers
Bauer Brothers Co.
Dilts Machine Works
Shartle Brothers Machine Co.

Pulps
Brown Company
Bulkley, Dunton Pulp Co., Inc.
Gottesman & Co., Inc.
Elof Hansson, Inc.
Lyddon & Co. (America), Inc.
Parsons & Whittemore, Inc.

to Buy

Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.
Pulp Sales Corp.

Pulpstones
Norton Company

Pumps
Allis-Chalmers Mfg. Co.
American Paper Mchy. & Engrg. Works, Inc.
American Well Works
Black-Clawson Company
Buffalo Pumps, Inc.
Byron Jackson Co.
Dorr Company
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Frederick Iron & Steel, Inc.
Gibbs-Brower Company, Inc.
Ingersoll-Rand Co.
Johnson Corp.
Moore & White Co.
Nash Engineering Co.
Paper Converting Mch. Co.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Warren Steam Pump Company

Radiant Burners
Red-Ray Mfg. Co., Inc.

Rag Cooking Processes
Adell Chemical Co.
William Allen Son's Company
The Kinsley Chemical Company
General Dyestuff Corp.
Rohm & Haas Co.

Rag Cutters
Gibbs-Brower Company, Inc.
B. F. Perkins & Son, Inc.
Taylor-Stiles & Co.

Recaustieizing Plants
General American Transportation Corp.

Recovery Systems
William Allen Son's Company
American Well Works
Babcock & Wilcox Co.
Bulkley, Dunton Pulp Co., Inc.
Combustion Engrg. Co., Inc.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones Corp.
Ross Engineering Corp., J. O.
Valley Iron Works Co.

Reels
The Appleton Machine Co.
Black-Clawson Company
Downingtown Mfg. Co.
Hudson Sharp Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

Refiners
Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
Gibbs-Brower Company, Inc.
The Hermann Mfg. Co.
E. D. Jones & Sons Co.
Morden Machines Co.
Murray, D. J., Mfg. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sutherland Refiner Corp.
Valley Iron Works

Regulators
Allis-Chalmers Mfg. Co.
American Paper Mchy. & Engrg. Works, Inc.
Armstrong Machine Works
Bird Machine Company
The Bristol Company
Cochrane Corp.
DeZurik Shower Company
The Foxboro Company
Jones, E. D., & Sons Co.
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
Minneapolis-Honeywell Regulator Co.
National Technical Laboratories
Paper and Industrial Appliances
Shartle Brothers
Stickle Steam Specialties Co.
Taylor Instrument Companies
Wallace & Tiernan

Resins
American Cyanamid Company, Industrial Chemicals Divisic
The Dow Chemical Company
The Goodyear Tire & Rubber Company
Hercules Powder Co.
Monsanto Chemical Company
Rohm & Haas Co., Resinous Products Div.

Rolls
American Cast Iron Pipe Co.
Appleton Machine Co.
Black-Clawson Company
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell Co.
The Midvale Company
The Moore & White Co.
D. J. Murray Mfg. Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
Raybestos-Manhattan Inc., Manhattan Rubber Division
J. J. Ross Company
Ross Paper Machy. Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Stowe-Woodward, Inc.
Valley Iron Works Co.
Waldron Corp., John
The Youngstown Welding & Engrg. Co.

Roll Covers
The Cincinnati Rubber Mfg. Co.
The Goodyear Tire & Rubber Company
Raybestos-Manhattan Inc., Manhattan Rubber Division
Stowe-Woodward, Inc.

Roll Stands
Cameron Machine Co.
Frank W. Egan & Co.
Moore & White Co.
Potdevin Machine Co.
John Waldron Corp.
H. G. Weber & Co., Inc.

Roofing Materials
Johns-Manville Sales Corp.

Rope Carriers
The Moore & White Co.

Rotary Boilers
The Biggs Boiler Works Co.

Rotary Steam Joints
Johnson Corp.
The Moore & White Co.
Perfecting Service Corp.

Rubber Products
The Goodyear Tire & Rubber Company
Raybestos-Manhattan Inc., Manhattan Rubber Division
Stowe-Woodward, Inc.

Saturants
American Anode Div., The B. F. Goodrich Chem. Co.

Saturating Machines
Black-Clawson Company
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
Noble & Wood Machine Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

Savealls
Bird Machine Company
Hardinge Company

Scales
Fairbanks, Morse & Co.
Merrick Scale Mfg. Co.
Testing Machines, Inc.
Walker-Goulard-Plehn Co.

Screen Plates
Bird Machine Company
Fitchburg Screen Plate Co.
Magnus Metal Corp.
Morey Paper Mill Supply Co.
Testing Machines, Inc.
Union Machine Co.
Union Screen Plate Co.

Screens
Allis-Chalmers Mfg. Co.
American Paper Mchy. & Engrg. Works, Inc.
American Well Works
Appleton Wire Works
Appleton Machine Company
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Harrington & King Perforating Co.
Improved Paper Machy. Corp.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Trimbey Mach. Wks.
Valley Iron Works Co.

Sheet Machines
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
The Hermann Mfg. Co.
Suburban Machine Co.
Valley Iron Works Co.

Shower Pipes
Bird Machine Company
DeZurik Shower Company
Downingtown Mfg. Co.
Moore & White Co.
Sandusky Fdy. & Mch. Co.
Shartle Bros. Mach. Co.
Smith & Winchester Mfg. Co.

Shredders
Bauer Brothers Co.
Carthage Machine Co.
Gibbs-Brower Company, Inc.

Sizing
American Cyanamid Company, Industrial Chemicals Division
Black-Clawson Company
The Dow Chemical Company
du Pont, E. I., de Nemours & Co.
Glidden Company
Hercules Powder Co.
Monsanto Chemical Company
National Aluminate Corp.
Philadelphia Quartz Co.
Stein-Hall Co., Inc.

Sizing Tester
W. & L. E. Gurley

Slime Control
Buckman Laboratories, Inc.
W. A. Cleary Corp.
The Dow Chemical Company
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.
Mallinckrodt Chemical Wks.
National Aluminate Corp.
Rohm & Haas Co.

Slitters
Black-Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson Sharp Machine Co.
Langston Co., Samuel M.
Machinery & Prod. Engrg. Corp.
Moore & White Co.
D. J. Murray Mfg. Co.
Potdevin Machine Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Suburban Machine Co.
Valley Iron Works Co.
Waldron Corp., John

Smoke Stacks
William Allen Son's Company
The Biggs Boiler Works Co.

Splicing Tissue
Williams-Gray Co.

Softness-Stiffness Tester
W. & L. E. Gurley
Testing Machines, Inc.

Soluble Oils
Adell Chemical Company
American Cyanamid Company, Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

Solvents
Adell Chemical Company

Stainless Steel
American Cast Iron Pipe Co.
Armco Steel Corp.
Ingersoll Steel Div., Borg-Warner Corp.
Michigan Steel Casting Co.
The Midvale Company
U. S. Steel Corp.

Starch
American Cyanamid Company, Industrial Chemicals Division
A. M. Meincke & Son, Inc.
Clinton Industries, Inc.
National Starch Products Inc.
Stein-Hall Co., Inc.

Steam Joints
The Moore & White Co.

Steam Specialties
Babcock & Wilcox Co.
Cochrane Corp.
Combustion Engrg. Co., Inc.
Johnson Corp.
Perfecting Service Corp.
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

Steel
Armco Steel Corp.
Carnegie Illinois Steel Co.
Ingersoll Steel Div., Borg-Warner Corp.
Lukens Steel Company
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
U. S. Steel Corp.

Steel, Clad
Babcock & Wilcox Co.
Lukens Steel Company

Steel Plate Shapes and Treads
By-Products Steel Co.

Steel Tanks
William Allen Son's Company
The Biggs Boiler Works Co.

Strapping & Strapping Machines
The Stanley Works

Stuff Chests
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

Suction Boxes
Black-Clawson Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

Suction Unit
Paper & Industrial Appliances, Inc.

Sulphur
American Cyanamid Company, Industrial Chemicals Division
Texas Gulf Sulphur Co.
Witco Chemical Company

Sulphur Burners
Valley Iron Works Co.

Sulphur Dioxide
Ansul Chemical Company
Virginia Smelting Co.

Supercalenders
The Appleton Machine Co.
B. F. Perkins & Son, Inc.

Synthetic Latices
American Anode Div., The B. F. Goodrich Chem. Co.
The Goodyear Tire & Rubber Company
Nopco Chemical Co.

Tachometers
The Brown Instrument Co.

Talc
American Cyanamid Company, Industrial Chemicals Division
W. H. Loomis Talc Corp.

Tank Cars
General American Transportation Corp.

Tank Cleaning Tools
Aurand Mfg. & Equipt. Co.

Tanks
William Allen Son's Company
The Biggs Boiler Works Co.
Cochrane Corp.
General American Transportation Corp.
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.

Where to Buy

The Noble & Wood Machine Co.
Raybestos-Manhattan Inc., Manhattan Rubber Division
B. F. Perkins & Son, Inc.
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Stowe-Woodward, Inc.
Waldron Corp., John

Tearing Testers
Testing Machines, Inc.

Tensile Testers
B. F. Perkins & Son, Inc.
Testing Machines, Inc.

Thickeners, Deckers and Saveralls
American Well Works
The Appleton Machine Co.
Bird Machine Company
Bulkley, Dunton Pulp Co., Inc.
Carthage Machine Co.
Cheney Bigelow Wire Works
Dilts Machine Works
Dorr Co.
Downingtown Mfg. Co.
General American Transportation Corp.
Hardinge Co., Inc.
Improved Paper Machy. Corp.
Moore & White Co.
D. J. Murray Mfg. Co.
Oliver United Filters, Inc.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

Titanium
E. I. du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.
Witco Chemical Company

Tools
Ingersoll-Rand Co.
The Stanley Works
Walworth Company

Tractors & Trucks
Towmotor Corp.
Clark Equipt. Co., Clark Tractor Div.

Transmissions
Link Belt Company

Traps
Armstrong Machine Works
Cochrane Corp.
Crane Co.
Johnson Corporation
Shartle Bros. Mch. Co
Stickle Steam Specialties Co.

Tubes
Babcock & Wilcox Co
National Tube Co.

Tubing, Mechanical
National Tube Co.

Tubs
Rodney Hunt Machine Co.
Shartle Brothers
Valley Iron Works Co.

Turbines
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Company
Hunt, Rodney, Mach. Co.

Turpentine Recovery
Foster Wheeler Corp.

Used Equipment
Frank H. Davis Company
Gibbs-Brower Co.
Thomas W. Hall Co.
J. J. Ross Company
Ross Paper Machy. Corp.
Shartle Brothers Machine Co.
Suburban Machine Co.

Valves
Askania Regulator Co.
The Bristol Company
The Brown Instrument Co.
Cochrane Corp.
Crane Company
Dilts Machine Works
The Foxboro Company
E. D. Jones & Sons Co
Magnus Metal Corp.
D. J. Murray Mfg. Co.
William Powell Co.
Record Fdy. & Mch. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Taylor Instrument Companies
Trimbey Mach. Wks.
Valley Iron Works Co.
Walworth Company

Vats & Vat Parts
Union Machine Co.
Union Screen Plate Co.

Washers
Bird Machine Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Moore & White Co.
Oliver United Filters
The Sandy Hill Iron & Brass Works
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co

Waste Treating Equipment
Alhydro, Inc.
American Well Works

Water Conditioning
Alhydro, Inc.
American Well Works
Calgon, Inc.
Cochrane Corp.
General Dyestuff Corp.
National Aluminate Corp.

Water Dispersions
Alhydro, Inc.
American Anode, Inc.
Rohm & Haas Co., Resinous Products Div.

Waxes
Hercules Powder Co.

Waxing Machinery
Black-Clawson Co.
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

Welding Equipment
Allis-Chalmers Mfg. Co.
General Electric Company
Walworth Company

Wet Machines
Black-Clawson Co.
Carthage Machine Co.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
Pusey & Jones Company
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

Wetting Agents
American Cyanamid Company, Industrial Chemicals Division
Adell Chemical Company
General Dyestuff Corp.
Hercules Powder Co.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co
Wyandotte Chemicals Corp.

Winders and Rewinders
The Appleton Machine Co.
Black-Clawson Company
Cameron Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Mach. Co.
Langston Co., Samuel M.
Machinery & Prod. Engrg. Corp.
Moore & White Co.
Paper Converting Mch. Co.
Potdevin Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Suburban Machine Co.
Waldron Corp., John

Wire Brushes
M. W. Jenkins Sons Inc.

Wires
Appleton Wire Works
Bulkley, Dunton Pulp Co., Inc.
International Wire Works
Lindsay Wire Weaving Co.
Williams-Gray Co.

Wire Brushes
Williams-Gray Co.

Wood Splitters
The Appleton Machine Co.
Carthage Machine Co.

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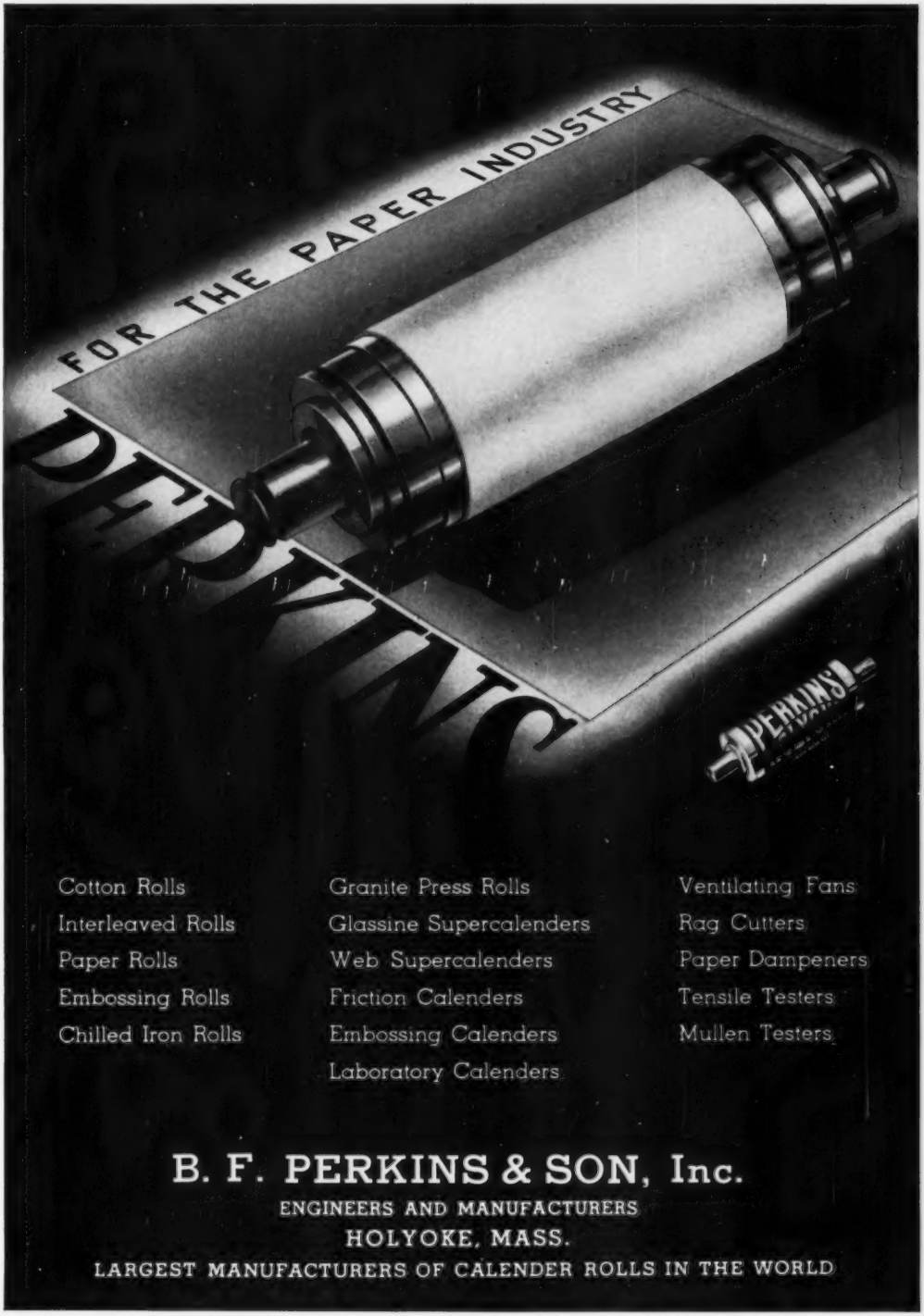

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